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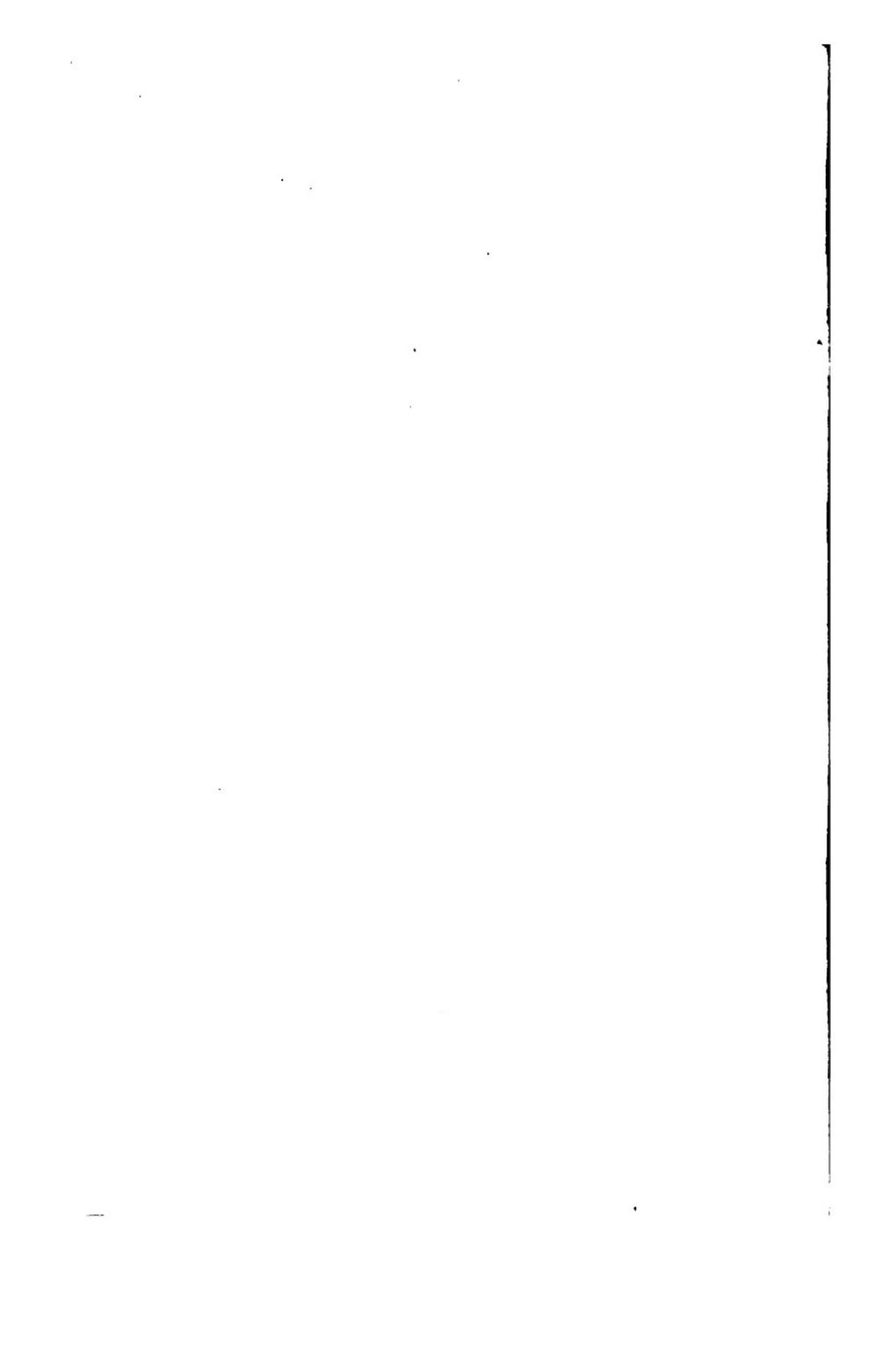
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A

# PHYSICIAN'S PROBLEMS.

BY

CHARLES ELAM, M.D., M.R.C.P.

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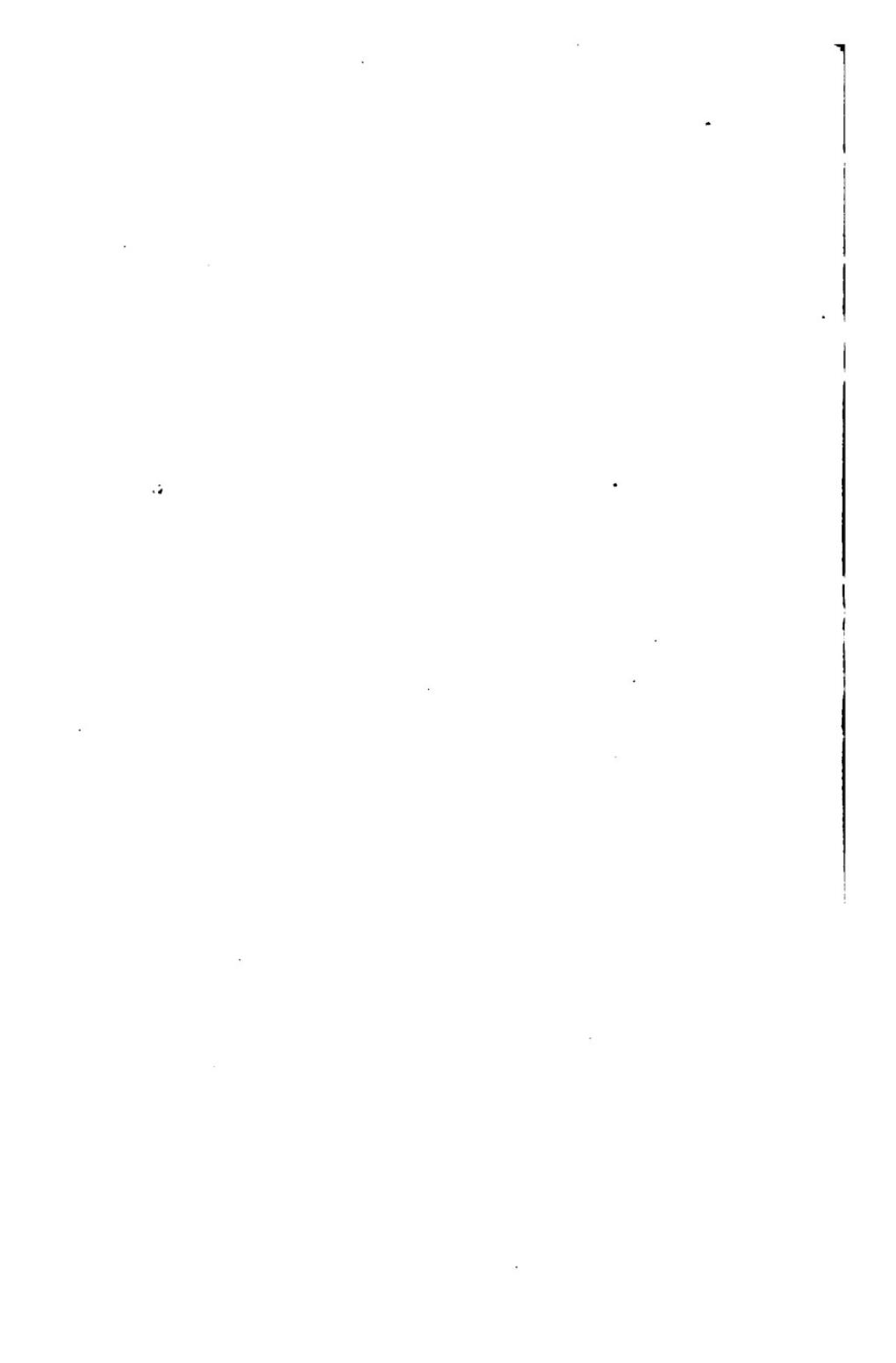
"Each of us is only the footing-up of a double column of figures that goes back to the first pair. Every unit tells,—and some of them are *plus* and some *minus*. If the columns don't add up right, it is commonly because we can't make out all the figures."

"There are people who think that everything may be done, if the doer, be he educator or physician, be only called 'in season.' No doubt,—but *is season* would often be a hundred or two years before the child was born; and people never send so early as that."

O. W. HOLMES.

"Of the two elements that compose the moral condition of mankind, our generalized knowledge is almost restricted to one. We know much of the ways in which political, social, or intellectual causes act upon character, but scarcely anything of the laws that govern innate disposition, of the reasons and extent of the natural moral diversities of individuals or races. I think, however, that most persons who reflect upon the subject will conclude that the progress of medicine, revealing the physical causes of different moral predispositions, is likely to place a very large measure of knowledge on this point within our reach."

LAECKY'S "History of European Morals," Vol. I. p. 166.



## P R E F A C E .

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THE following Essays are intended as a contribution to the Natural History of those outlying regions of Thought and Action, whose domain is the "debatable ground" of Brain, Nerve, and Mind. They are designed also to indicate the origin and mode of perpetuation of those varieties of organization, intelligence, and general tendencies towards vice or virtue, which seem, on a superficial view, to be so irregularly and capriciously developed and distributed in families, and amongst mankind. Subsidiarily, they point to causes for the infinitely varied forms of disorder of nerve and brain,— organic and functional,— far deeper and more recondite than those generally believed in;— causes that are closely, if not inextricably, connected with our original nature on the one hand, and on the other with our social and political regulations.

In attempting to make each Essay complete in itself, and yet an integral part of a connected series, it has occurred that there are many repetitions both of fact and formula. For these I must ask indulgence, as being inevitable; as well as for many other faults of composition and style.

But whilst I offer an apology for the manner, I

have none to bring forward for the matter in question. Though written in the intervals of an active professional life, these Essays have been the fruits of my most careful and earnest thought. As would become a courteous host, I offer to him who will sit down with me the best I have, without apology.

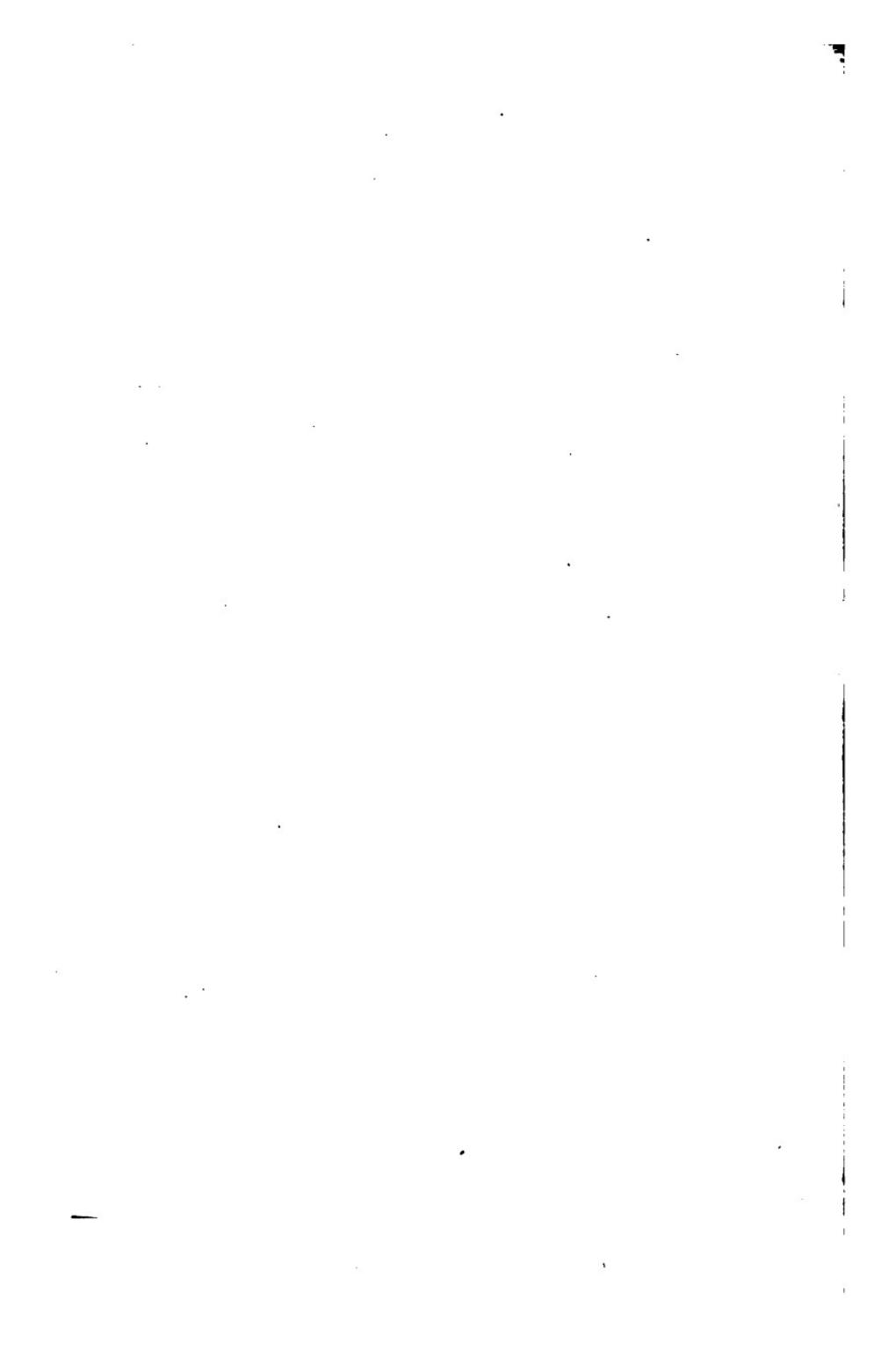
I can scarcely anticipate that the views enunciated, especially in the first three chapters, will meet in all respects with general acceptance or approval, even amongst thoughtful men. They relate to "problems" of no ordinary complexity and difficulty, concerning which great differences of opinion are inevitable. My object will be attained if intelligent inquiry is directed to the solution of them; and to an investigation of, and remedy for, some of the evils here indicated.

HARLEY STREET, June 21, 1869.

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# A PHYSICIAN'S PROBLEMS.

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## I.

### NATURAL HERITAGE.

**PROBLEM:** *What of essential nature do our parents and ancestors bequeath to us?*

*Apart from those transitory possessions of money, houses, and land, which do not endure, what do we derive from our parents that is permanent and inalienable, — that determines our temperament and constitution, our propclivities to health or disease, to virtue or vice, to dulness, mediocrity, or genius, — in short, our entire intellectual and moral nature, no less than our physical organization?*

It is a common saying that "the child is father of the man," — an axiom to which I have no objection to urge. But my present intention is to show that there would be a more profound significance in the apparent truism, that "the man is father of the child"; in other words, that the child is not only the offspring of the *race* (as a species), but of the *individual*, bearing the traces and consequences of his parentage throughout the whole of his compound nature, — on his body, soul, and spirit; and, as a most serious corollary to this, that the career of that child for good or evil, for personal advantages or the contrary, for intellect or for imbecility, and even for moral tendencies, if not written before his birth "with

pen of adamant on tablet of brass," is at least marked out for him by boundary lines, which to overpass, if unfavorable, will require more than ordinary courage, resolution, and a concurrence of favorable circumstances not often to be looked for. This position I propose now to illustrate.

A very cursory glance over the infinitely varied forms of animal life shows two leading principles in accordance with which these forms are arranged and originally constructed, viz. Uniformity and Diversity; the former manifested in those analogies of structure, type, and function which in a greater or less degree obtain throughout the whole of animated nature, enabling us to form groups for convenience of investigation and description; the latter indicated in those differences which constitute the characteristics of the various subdivisions into class, orders, genera, and species. With this final division into species (or, according to some physiologists, into varieties or races), the law of Diversity, so far as regards the specific or distinctive type of structure, is suspended; *species is constant*, — it may become extinct, but it cannot change. According to Cuvier, the cats, dogs, apes, oxen, birds of prey, and crocodiles of the Catacombs, do not differ from those of our own times, any more than human mummies thousands of years old differ from the skeletons of to-day. Lamarck, Geoffroy St. Hilaire, Darwin, and others, have certainly disputed the absolute fixity of species, recognizing the possibility of new species arising by accidental variation, and *natural selection*, from those already existing. But since we have no direct evidence of this ever taking place, and have abundance of presumptive proof to the contrary, so far, at least, as the experience of three thousand years will avail, we may safely assert that, in this broad general view, parents live in their offspring.

But although the law of Diversity is no longer operative in the modification of the specific type, its effects are manifest in the production of infinite varieties of individuality. Although a dog is always a dog, and a sheep always a sheep, there are no two exactly alike; in a pack of the former, or a flock of the latter, there are such individual peculiarities in each as to make them readily distinguishable by those familiar with them. These differences are more numerous and more clearly marked in proportion as the animal is more or less domesticated; in other words, in proportion as the mode of existence is more or less artificial.

In color and general form the wild horse, rabbit, pig, or cat presents so little variety, that the most practised eye would generally fail to detect any given individual out of a number; whilst the domesticated representatives of these tribes are in many cases as distinct in personal characteristics as though belonging to different species. As might be expected from analogy, man, leading a much more domesticated and artificial life than any other animal, presents these individual varieties multiplied to an extreme. In the countless millions of our race that have lived since the creation of the world, it may be safely asserted that no two have been exactly alike in person, intellect, or moral nature;—none so similar that, placed side by side, no mark of distinction could have been detected.

"Postremo quodvis frumentum, non tamen omne  
 Quodque in suo genere inter se simile esse videbis,  
 Quin intercurrat quædam distantia formis.  
 Concharumque genus simili ratione videmus,  
 Pingere telluris gremium, quâ mollibus undis  
 Litoris incurvi bibulam pavit æquor arenam."—**LUCRETIUS.**

Yet with all this diversity the primary law of uniformity is not forgotten; the dwarf and the giant, the black, the yellow, and the white, Antinoüs and Thersites, the

philosopher and the imbecile, the virtuous man and the man of the most debased instincts and tendencies, — all these, contrasted as they mutually are, are still contained within the normal type of humanity, and in their extremes are still more like the ideal man than any other creature.

The operation, then, of these two original laws is constant and uniform ; and it becomes an interesting question to ask whether any individual man is the child of the species or of the parents essentially. Looking at the innumerable instances of unmistakable resemblance between parent and offspring, both of a physical and a moral nature, we are led to believe in a direct and uniform heritage of quality and form ; whilst considering the striking differences between members of even the same family, we cannot but recognize that this direct heritage is greatly affected by modifying agencies.

Under the law of uniform transmission of organization, we observe children inheriting not only the general form and appearance of their parents, but also their mental and moral constitutions, — not only in their original and essential characters, *but even in those acquired habits of life, of intellect, of virtue, or of vice, for which they have been remarkable.* Under the law of Diversity, we observe deformity and ugliness giving origin to grace and beauty, apparent health producing disease, virtue succeeded by vice, intellect by imbecility, and the converse of all these phenomena. By virtue of this law, therefore, generations are enabled to free themselves from the taint entailed upon them by their ancestry, and return to their original purity of type.

It may, however, be doubted whether these two laws be in reality so opposed as they appear to be on a superficial view, — whether any viable child is ever born without distinct external or internal evidence of its parent-

age in some feature or organ ; and whether the evident differences may not in all cases be due to a direct heritage of some temporary and transitory condition of the vital force at the period of procreation. This may be more readily elucidated when we have examined the phenomena of likeness and dissimilarity accompanying the succession of generations.

In the mean time the action of the two laws introduces an insuperable obstacle to the *exact* prediction in most instances of the qualities of the child from a knowledge of those of the parents. Yet one class of phenomena is almost exempt from this species of uncertainty,—the most important and the most practical. External form and color may be subject to variation,—health or disease in the parent need not necessarily produce in the child a similar condition,—organic peculiarities may possibly disappear in the offspring,—*inherent, intellectual, or moral qualities may not always be transmitted; but an acquired and habitual vice will rarely fail to leave its trace upon one or more of the offspring, either in its original form or one closely allied.* “Habitus per assuetudinem adquisitus transit in naturam, quæ difficulter removetur.” (Mercatus, *De Morb. Hered.*) The habit of the parent becomes the all but irresistible instinct of the child ; the voluntarily adopted and cherished vice of the father or mother becomes the overpowering impulse of the son or daughter ; the organic tendency is excited to the uttermost, and *the power of will and of conscience is proportionately weakened*,—weighty considerations in forming a judgment on the responsibility of those so fatally affected by this direct inheritance of crime. And so by a natural law it is, and not by any arbitrary or unjust interpolation of Divine vengeance, that the sins of the parents are visited upon the children,—that the fathers eat sour grapes, and the children’s teeth are set on edge.

The illustration of this principle, and the important claims which its recognition has both upon individuals and communities, will form the chief object of my present remarks ; but before entering upon it, it will be necessary to review the general phenomena accompanying successive generations, organically considered, which I shall proceed to do after disposing briefly of some probable objections.

The doctrine of hereditary transmission of qualities, both corporeal and mental, has had a somewhat singular fate amongst philosophers ; inasmuch as it has met with almost universal acceptance as a matter of fact and theory, yet has been almost completely ignored as to its practical bearing by moralists and legislators. Historians and poets have alike, in ancient times, registered the philosophic and popular views which attributed both personal and moral characteristics to parentage. Herodotus mentions the heritage of caste, of profession, and of moral and intellectual attributes. He casually alludes to Evenius possessing the power of divination, which, as a *natural consequence*, was inherited by his son, Deiphonus. Homer represents Minerva as addressing Telemachus in language which doubtless embodies the popular views of that time :—

“ Telemachus ! thou shalt hereafter prove  
 Nor base nor poor in talents. If in truth  
 Thou have received from Heaven thy father's force  
 Instilled into thee, and resemblest him  
 In promptness both of action and of speech,  
 Thy voyage shall not useless be, nor vain.  
 But if Penelope produced thee not  
 His son, I then hope not for good effect  
 Of this design, which ardent thou pursuest.  
 Few sons their fathers equal; most appear  
 Degenerate: but we find, though rare, sometimes  
 A son superior even to his sire.”

Hippocrates, noticing the resemblance of children to

their parents, concludes that this does not so much or so essentially consist in the formation or organization of the body, as in the habit or condition of the mind, — *et patrum in natos abeunt cum semine mores.*

Horace's well-known maxim is to the same effect :—

“ Fortes creantur fortibus et bonis;  
Est in juvencis, est in equis patrum  
Virtus; nec imbellem feroce  
Progenerant aquilæ columbam.”

And again, Juvenal :—

“ Scilicet expectas, ut tradat mater honestos,  
Atque alios mores, quam quos habet? utile porr̄  
Filiolam turpi vetulæ producere turpem.” — *Sat. vi.*

The sacred writings abound with the recognitions of moral heritage ; I have alluded to some of these passages above. There is another apparently still more direct and forcible. It was a cutting reproach to the Jews, but was not considered even by them as illogical or inconsequent to say, “ Wherefore ye be witnesses unto yourselves, that ye are the children of them which killed the prophets : Fill ye up then the measure of your fathers.” The sacred code of the Hindoos carries the principle of hereditary resemblance almost to a mystical identity of personality.

The opinions of thoughtful men of later times may almost be summed up in the words of the profound physiologist, Burdach : “ that heritage has in reality more power over our constitution and character, than all the influences from without, whether moral or physical.”

Notwithstanding all this weight of testimony to the significance of the phenomena, and notwithstanding the undeniable force of these, the *consequences* of the doctrine in question are so grave, and at the same time so inevitable, that it is in no degree surprising that men have attempted to escape from them by denying the

premises. The objections have come from the metaphysician, the speculative moralist, the theologian, and the legislator. The first, assuming and asserting man's soul to be simple, indivisible, and uncompounded, rejects entirely the possibility of its owing anything to a double parentage, — the trunk, he says, cannot arise from two stems. The speculative moralist objects that man is hereby made at once more and less responsible for his actions ; *less* so, because the strong, sometimes almost irresistible, tendency to them is born with him, along with a weakened power of will or resistance, — *more* and more weightily responsible, because the effects of his evil deeds do not die with him, but are handed down to after-generations. The theologian reads that “the soul that sinneth, it shall die,” and that the children shall *not* be answerable for the sins of the parents ; and he cannot see how this is consistent with a direct heritage of propensity to special evil, superadded to the original taint of transgression. The legislator objects to the doctrine because of the apparently insuperable difficulties which its practical recognition would introduce, in the adjudication of degrees of culpability for crime. All these see the natural and inevitable consequence of these views, and alike escape from them by denying hereditary influence, some *in toto*, others in part. Such as are consistent and unscrupulous profess to see no such thing anywhere as either physical or moral heritage, affirming that all resemblances are accidental, — the casual results of the numerous combinations of the elements of the species ; amongst these it is astonishing to find so careful an observer as Louis. Others, amongst whom the distinguished physiologist, Lordat, is the leader, acknowledge the hereditary force in animals, but deny it in man. Others, again, compelled by force of demonstration to recognize a natural succession of corporeal

qualities, forcibly dismember human nature ; and, whilst they acknowledge that organization begets like organization, they utterly and completely deny, irrespective of all evidence, the influence of man's moral nature upon his descendants ; and hypothecate a continual re-creation of soul and mind for each individual and each generation. It is, perhaps, needless to say that the theologian cannot hold this latter view, as it would be subversive of the doctrine of inherited and original moral taint.

I have introduced these objections, apparently out of place, before illustrating the doctrines themselves, because they are such as will naturally suggest themselves to the reader's mind, as he sees the consequences developing from facts ; and I wish, by a very brief answer, to provide against this. I would say, in the first place, that if facts are clear and conclusive, *a priori* theoretic considerations cannot reasonably be allowed to annul the deductions. In regard to the moral responsibility of given individuals, the subject is beset with difficulties, and can scarcely be satisfactorily discussed until we are further advanced in the inquiry. It may be said, however, at this stage, that *tendency is not action*. Between the impulse to commit any given act, and its actual accomplishment, there is in the sane mind an interval during which Will and Conscience are in operation ; and, according as action conforms to these two, it is more or less an object of responsibility. To the legislator we may reply very concisely, — either the doctrine is true, or it is false ; if the latter, this must be proved by facts, and not by *ex post facto* considerations ; if the former, any attempt to deny or ignore it, simply to evade supposed difficulties, is merely criminal.

There are others, however, whose indisposition to entertain this doctrine is of a more practical nature, and

more deserving of sympathy,— I mean those who consider the bearing of this question upon the heritage of disease. They see the facts of frequent, perhaps almost invariable, succession of disease, from generation to generation, but hesitate to recognize in this the stern pressure of an inevitable law. To them it seems hard that masses of the people should have to say, "*Our fathers have sinned, and are not; and we have borne their iniquities.*" Yet in the arrangements alike of nature and Providence, it will be found that if "*clouds and darkness are round about Him,*" it will ultimately appear that "*righteousness and judgment are the habitations of His throne.*" Even out of this darkness there gleams a light. Evil is not eternal, nor disease,— it has its *natural history*, its rise, and its decay and disappearance. As in all natural departures from original type, due to special causes, there is a constant tendency to return to the type, when the disturbing influences are removed; so in disease, when the cause is removed, lapse of time, or a succession of generations, may purify the organization, and the curse will be removed. In Dr. Gull's eloquent discourse on "*Clinical Observation in Relation to Medicine in Modern Times,*"<sup>1</sup> there are some remarks so appropriate to this subject, that I make no apology for quoting them at length: "The strength of modern therapeutics lies in the clearer perception than formerly of the great truth, that diseases are but perverted life processes, and have for their natural history, not only a beginning, but a period of culmination and decline. In *common* inflammatory affections, this is now admitted to be an almost universal law. By time and rest, that innate *vix medicatrix*,

‘ Which hath an operation more divine  
Than breath or pen can give expression to,’

reduces the perversions back again to the physiological

<sup>1</sup> See Notes at the end of the Essay.

limits, and health is restored. To this beneficent law we owe the maintenance of the form and beauty of our race, in the presence of so much that tends to spoil and degrade it. We cannot pass through the crowded streets and alleys of our cities without recognizing proofs of this in the children's faces, in spite of all their squalor and misery ; and when we remember what this illustration, in all its details, reveals, we may well take heart, even where our work seems most hopeless. *The effects of disease may be for a third or fourth generation, but the laws of health are for a thousand."*

Having thus alluded to the objections urged against natural heritage (to which, should space permit, I shall return hereafter), I now proceed to a detailed examination of the phenomena upon which these views are founded, under the two divisions of the law of Diversity, and the law of Uniformity, or likeness, — both (and equally) laws of inheritance : by virtue of the one, the child represents the nature of its parent ; by the other, it represents also the possibilities of the species. But in speaking of these laws let it be understood that I mean no more than collections of phenomena. *Why* two masses of matter attract each other, or *why* under other circumstances, they repel, we cannot tell ; neither can we say *why* one child shall be like its parents, and another not ; but it is within our province to investigate the *conditions* under which such attraction and repulsion take place ; and also frequently those under which resemblance and dissimilarity occur.

I propose to commence my investigation by an inquiry into the law of Diversity, as involving in itself perhaps more curious facts than even that of Uniformity. As species is constant, it would not be startling to find that individual type became constant also ; that beauty should produce beauty, and deformity, deformity ; but that the

reverse should frequently happen may well excite some surprise.

It is in accordance with this law of Diversity that *species* has so strong a tendency, after artificial or accidental modification, to return to its original type,—as in the case of mixed breeds often returning to one or other parent stock. In accordance with it also, individuals are enabled to escape the consequences of evils which, were the hereditary law constant, would be entailed upon them. It is by this law that genius arises from mediocrity, virtue from vice, and the reverse of these. It is also by this law that, under certain physical agencies, under certain infractions of natural or moral regulations, and other circumstances, humanity degenerates into something far below its type. It is also probably in accordance with this law of spontaneous variation, that the races of men, now so different as to have suggested to many a diversity of origin, have sprung from one stock, in which a variety has occurred and become hereditary. This will receive further illustration hereafter. In personal appearance it frequently happens that children do not at all resemble their parents; from parents remarkable for plainness, as Maupertuis observes, spring often children of extreme beauty. This fact struck Sinibaldi amongst the Italian peasantry very forcibly. "I have often asked myself," says he, "whence it arose, that from almost deformed rustics, and from females of hideous features, should spring girls of ravishing beauty." His somewhat singular theory I give in his own words:—

"Scio aliquem mordicus responsorum id accidere, quia hæcum nobilibus, venustisque, si placeat, congregantur. Absit injuria; non enim tanta libidinis licentia est in urbe, ut ubique vulnerata invenietur pudicitia, ubique thalamus, fides que temerata. Hoc evenit quoniam in urbe, frequentissime festivitates celebrantur, aut equitatus, aut publica spectacula fiunt,

aut cœlitum invisuntur tempa, aut auræ captandæ gratia per compita, plateasque, deambulatur. His omnibus accurrrunt mixtim viri mulieresque, et venusti simul juvenis, ut formosarum conspectibus fruantur. Quare mulierculæ quæcumque etiam aspiciuntur, salibus ac dicteriis aphrodisiasticis incessuntur, unde et illæ animo menteque idola illa pulcherimæ juventutis conspicunt, ad quorum deinde exemplum virtus formatrix, dum e suis viris concipiunt, decoras effingit facies, venustaque pingit membra.”<sup>2</sup>

In stature it sometimes happens that moderately sized parents have very tall, or very short children, without any well-marked physical reasons for such variations. Venette relates the case of a family of eight children, of whom the alternate four were dwarfs. The celebrated Pole, Borwslaski, whose height was twenty-eight inches at his full growth, was born of healthy parents of ordinary stature. They had six children,—the eldest thirty-four inches high; the youngest, at six years of age, twenty-one inches; the three other brothers, five feet six inches each.

The eyes and hair frequently differ in color from those of both parents, a child with fair hair occurring in a family of brunettes, &c. A recognition of the true principle of “spontaneous variation” would, in some of these cases, tend to prevent any misinterpretation of the phenomena. A variation very frequently observed in the color of the hair, is the succession of red hair in one generation to black hair in the preceding one. A friend, very familiar with the Highlands of Scotland, informs me that this succession is almost constant there,—and that the *Dhu*, or black, is generally succeeded by the *Ruach*, or red, and *vice versa*,—whilst the *Bahn*, *Bane*, or white, evinces more constancy in color. It is exceedingly rare to find red or black hair in the *white* or fair-haired tribes; while the darker tribes regularly alternate black and red.

Sometimes the two eyes are of different colors. Buffon states that this peculiarity is only observed in the horse and in man ; but I remember to have seen the same in an entire family of cats.

Internal organization, and what is called temperament, of children, also differ from those of the parents and each other, in so many cases, that Louis considers variation the rule, and conformity only the exception : "Le tempérament des enfants qui naissent d'un même père, et d'une même mère, est presque toujours différent ; les uns sont bilieux, les autres sanguins," &c.

It is a remarkable fact that twins are often very different in the respects just alluded to. Barthez relates the case of two twin sisters, in Hungary, who lived twenty-two years, and who, although joined together by organic union, and having a communicating system of blood-vessels, were of most dissimilar temperament and disposition. It may be mentioned that twins so united have not generally any common nature, or striking similarity. An interesting illustration of the diversities that may thus exist may be found in a description of the Siamese twins by Sir James Simpson, in the *Lancet* for this month (March, 1869).

Curious minor idiosyncrasies are frequently met with, springing up in children without corresponding traits in the parents ; in fact, all those peculiarities which we shall afterwards see becoming hereditary have at first originated according to this law of spontaneous variation, of which little explanation can be given. Zimmerman mentions several instances of these apparent anomalies. One man experiences intolerable anguish on having his nails cut ; another cannot bear the touch of a sponge on the face ; another is sick with the smell of coffee, &c. : all these may become hereditary.

There are spontaneous variations of type observed

amongst animals which are of more importance than these, as throwing light upon certain branches of anthropology, — such is the production of apparently new races from an old stock. I do not here allude to the progressive variations often produced in wild races of animals in process of domestication, — changes induced by climate, food, culture, &c., — and which are liable gradually to disappear on a return to the wild state, such as have been observed in the horse and the wild boar ; but to absolute and permanent alteration of certain parts of the organization which are propagated to the descendants in perpetuity. One instance will suffice to illustrate this point. Dr. Prichard says :—

“ A singular variety of sheep has appeared within a few years in New England, which furnishes an example of the origination of variety in form. The first ancestor of this breed was a male lamb, produced by a ewe of the common description. This lamb was of singular structure, and his offspring, in many instances, had the same characters with himself : these were shortness of the limbs, and greater length of the body in proportion ; whence this race of animals has been termed the otter breed (otherwise the *ancon* sheep). The joints also were longer, and their fore-legs crooked. It has been found advantageous to propagate this variety, because the animal is unable to jump over fences.”

Instances of similar originations of permanent varieties from the ordinary well-known races might be almost indefinitely multiplied, but this is sufficient to illustrate the principle ; and cases are related of analogous disproportionate development of the extremities amongst men, which became constant in some families. Buffon mentions several instances of this kind ; and these facts have a special interest as bearing upon the possibility of the origin of all the varieties of the human race from one

common stock. The differences between the *ancon* and the ordinary sheep are not less specific and marked than those between the European and the African ; and whilst we see one originating from the old common stock, we cannot doubt the *possibility* that the others may have had a common parentage. Neither is it altogether a matter of analogical inference alone that varieties may arise under our observation in our own species, having peculiarities as marked as those of any separate race. In the year 1731, a boy named Edward Lambert was exhibited before the Royal Society, who was afterwards exhibited in London as the Porcupine Man. He was at this time about fourteen years of age, and presented a very remarkable appearance : his whole body was covered by a thick horny, scaly, or bristly integument ; the most characteristic parts " looking and rustling like the bristles or quills of a hedgehog shorn off within an inch of the skin." Twenty-six years after this he was again shown to the Royal Society. He had enjoyed good health, but was still entirely covered by these bristles. He had been twice salivated, and once had the small-pox, at which times he lost his covering ; but it very soon reappeared. He had now six children, all with the same rugged covering as himself, the first appearance of which came on, as it did in himself, about nine weeks after birth. The relator of this account, Mr. Baker, continues : " It appears, therefore, past all doubt, that a race of people may be propagated by this man having such rugged coats, or coverings as himself ; and if this should ever happen, and the accidental original be forgotten, it is not improbable they might be deemed a different species of mankind." Mr. Lawrence adds to this : " Two brothers, John Lambert, aged twenty-two, and Richard, aged fourteen, grandsons of the original porcupine man, Edward Lambert, were shown in Germany, and had the cutaneous

incrusted already described." Dr. Prichard states that he has seen a similarly affected individual, who gave himself out to be a descendant of the Lambert family.

One of the most distinctive marks of the negro race has been esteemed the woolly hair. Dr. Prichard remarks that he has seen hair on the heads of some Europeans scarcely distinguishable from wool; "particularly of a boy whose parents are both English rustics, without any peculiarity of appearance; the boy had hair which appeared so similar to that of an African, that on a minute comparison I could discern no other difference than that of color, and perhaps a slight diversity in the surface."

The production of monstrosities is another remarkable illustration of the law of variety in heritage. Examples are very numerous amongst animals. Aucante relates instances of four successive litters of puppies, born of healthy parents, some of which in each litter were well formed, whilst the remainder were without anterior extremities, and had hare-lip. Children are frequently born with hare-lip, of perfectly healthy parents. Numberless instances of similar spontaneous malformations may be found related by Burdach and Geoffroy St. Hilaire, and also by Dr. Prosper Lucas in his valuable and comprehensive work "*Sur l'Hérédité Naturelle*," to which I am indebted for some of the following illustrations. The learned writer, however, is not always so careful in weighing and sifting his facts as might be wished. One of his illustrations of hereditary longevity has long appeared in one of our English jest-books. It may, however, have an earlier authority, and a more worthy recommendation, of which I am unaware.

In regard to intellectual and moral varieties springing up in the same families, under identical conditions, the experience of every man will furnish ample illustrations.

The law received its first fulfilment in the family of our first parents, and has never failed to manifest itself for six thousand years. Let us observe carefully those members of a family who seem even most alike, and what differences shall we not see in their tastes, their appetites, their inclinations, talents, ideas, judgment, and reasonings. The ancient poets had not failed to remark the dissimilarity of those most closely allied.

"*Castor gaudet equis, ovo prognatus eodem pugnis,*"

says Horace ; and Herodotus illustrates the same point by the example of Eurysthenes and Procles. The only instance which we need mention is that of Ritta and Christina, the Presbourg twins, who were united like those above mentioned by an organic connection. Of these, one was pleasant, quiet and amiable ; the other was plain, ill-tempered, quarrelsome, and of extremely excitable passions ; she was so violent against her inseparable sister, that they could not be trusted alone.

[ Nothing can prove more strikingly than this how strong is innate disposition, and how *comparatively* slight is the influence of the physical and moral medium in which children may be placed ; since here surrounding circumstances must always have been precisely similar, and yet the issue was so diverse. From such facts as these St. Augustine<sup>3</sup> very forcibly argues against any possible truth in astrology.

The law of Diversity, acting upon the intellectual and moral nature of the child, may be either in its favor or the reverse ; of the former, all emanations of talent or genius not possessed by the parents are examples. It has long been a popular idea, however, that clever men more frequently have fools for their children than the reverse, an opinion embodied in the old proverb, "*Heroum filii noxae, et amentes Hippocratis filii,*" and

continually illustrated by the families of Pericles, of Aristides, Thucydides, Phocion, Aristarchus, Socrates, Cato of Utica, and numerous other ancients; and in modern times by those of Henry IV., Louis XIV., Oliver Cromwell, Napoleon, &c. It will appear hereafter that an equal weight of testimony may be adduced on the opposite view; meantime, as in all these instances of diversity, whether moral or physical, we are not in condition to detect the law which presides over them.

Not to dwell too long upon this branch of our subject, I shall but notice, in conclusion, a singular instance of an unhealthy, ill-developed family proceeding from healthy, robust, intelligent, and moral parents. The eldest son, aged twenty-four, was three feet two inches in height, without beard or signs of virility, and subject to attacks of catalepsy. The next to him was tall, strong, and robust, but of a bad disposition. A daughter, aged sixteen, was three feet in height, and an almost dumb idiot; another girl, aged ten, and a boy of seven, were completely imbecile, and could not speak, having tongues so thick that they could not be protruded.

Such are a few illustrations of the principal modes in which the law of Diversity manifests itself; so striking in many of its details as to lead observers to the conclusion, that diversity is the *one* law, and heritage of similar qualities the exception. Thus, the distinguished naturalist, Bonnet,<sup>4</sup> after reviewing these phenomena, comes to this opinion, that "the germ bears the original impress of the species, but *not of individuality*; it is in miniature a man, a horse, or a bull, &c.; but *it is not* any individual man, or horse, or bull." Wollaston, Helvetius, Louis, Weikard, and a host of great names, subscribe to this view, and attribute all varieties, all resemblances, and all dissemblances, to the medium in which the new-born

man or animal is placed ; — *medium* including all influences both moral and physical, — food, climate, education, &c. How incompatible this is with observed phenomena has already partly appeared, and will appear more fully hereafter, when the facts of direct inheritance have passed under notice.

The direct transmission of the qualities of the parent to the child is shown in external resemblance, in similarity of internal organization, in habit and gesture, in temperament, in instinctive impulses, and in moral and intellectual tendencies and aptitudes. Accidental defects and diseases are also occasionally amenable to the same law ; and lastly, certain vicious habits in the parents, and certain forms of neglect of natural laws and the rules of hygiene, give rise to certain transformations and degenerations, both of a physical and a moral nature, in the offspring, which exercise the gravest influence over the future of these beings, who may almost be said to be foredoomed to an unfortunate existence ; but from which they are occasionally exempted in accordance with the law of spontaneous variation already alluded to ; or which is averted by the rational means suggested by an intelligent recognition of the source of such defects of nature. I proceed to notice in order these various heritages.

Personal resemblance between parents and offspring need not detain us long ; the experience of every day shows that children resemble their parents as strongly as in type they resemble the species, and no illustrations seem requisite. Yet there is something interesting in the manner in which some characteristic feature is handed down from one generation to another, sometimes for centuries. Not to mention but in passing the descendants of Abraham ; and the gypsies, in which tribes a distinctive physiognomy appears ever to prevail ;

we see in some noble or royal houses one particular feature adhering to them as a characteristic. The Bourbons have an aquiline nose ; and the reigning house of Austria is distinguished by a thick lip, which is said to have been introduced by the marriage of the Emperor Maximilian with Mary of Burgundy, upwards of three centuries ago. Burton<sup>6</sup> remarks : "That famous family of Oenobarbi were known of old, and so surnamed from their red beards ; the Austrian lip and those Indian flat noses are propagated, the Bavarian chin, and goggle eyes amongst the Jews, as Buxtorfius observes ; their voice, pace, gesture, looks, are likewise derived *with all the rest of their conditions and infirmities.*" Plutarch relates that all the members of a certain family in Thebes were born with the mark of a lance-head upon the body. It is said that the family of the Lansadas were so named from a like peculiarity. The Bentivoglios had all a distinguishing mark.

Stature is in many cases hereditary, which is well illustrated by the numerous gigantic figures both of men and women met with in Potsdam, where for fifty years the guards of the late Frederick William of Prussia were quartered ; a fact undoubtedly owing to the intermarriages of these men with the women of the city. The giant Chang, now (1869) exhibiting in London, eight feet six inches in height, states that his father was nine feet high. Haller states that for three generations his own family, without one exception, had been distinguished for great stature. The facts connected with bodily development are well known to all breeders of cattle or animals ; so strictly is each part of the conformation under the law of heritage, that, *at will*, the breeder can modify a race, by lengthening or shortening the limbs, by increasing or diminishing the fat or the muscle, or by accumulating these in particular localities ; and all these

## A PHYSICIAN'S PROBLEMS.

most certainty of calculation. In this manner is length of stride of the English racer attained, the sal strength of the dray-horse, and the development at in the beasts intended for the show or market. The same may be said concerning the color of the surface, and the tegumentary appendages, such as hair, wool, &c., all of which may be modified at will, and almost to any extent, by attention to simple rules, all founded upon the one fact of the constancy of transmission of qualities. The color is generally a mixture of that of the parents, if these be of different races; but if the parents be of the same race, the color of the children generally follows one or other parent exclusively. Thus, the child of a white man and a negro woman is a mulatto in the great majority of cases; but the child of a dark and a light parent *of the same variety* is usually like one or other, and not a mixture.

Instances have been known where the child of a negro and a white has been either black or white entirely; and in one case that is related by Prichard, the black and white color was not mixed, but occupied separate parts of the surface. These are singularities of which in the present state of science no explanation can be given,— practical assertions of the laws of Diversity. It may be added, that the experience of breeders tends to show that the male parent exercises a much stronger influence upon the color of the offspring than the female. It is also supposed (though this should be mentioned with doubt and hesitation) that, so far as organization generally is concerned, the male parent gives the locomotive system, and the female the vital organs. Could this be established as a law, it would indeed be an important point of departure for further investigations. At present it must be considered as only *sub judice*; but as an opinion proceeding from high authority, worthy of much

consideration. My own opinion, founded upon long observation, is strongly opposed to this view, or to any other that attaches special points of organization to either parent exclusively. Whether in feature, formation, internal organization, or character, it appears to me clearly demonstrable, that the parent possessing most salient points, or special distinguishing characteristics, has the most constant and striking influence upon the offspring.

It is not only bodily form and color, but also bodily activity and aptitude, which are heritable. Striking instances of this may be found in the stud-book, relating to the pedigrees of horses. The winners of the great races are always sought after to breed from. Eclipse was the father of 334 winners, which produced their owners the sum of £ 160,000 ; and King Herod, a descendant of Flying Childers, was the father of 497 winners. In the human subject, the muscular force and activity are also hereditary ; in ancient times the *athletes* were often in families ; and now the same tendency is often seen to prevail. All writers treating of heritage mention gait, gesture, and attitude as subjects therein involved ; often entire families are left-handed, even those members who have been withdrawn from it in infancy. M. Girou relates a singular instance of this kind of peculiarity. "G. is born of a family where the use of the left hand is hereditary : he is not left-handed himself, but he has a married daughter who is so, and all of whose children are so likewise. His son who is married is not left-handed, but has a little daughter in the cradle who is so to a strongly marked extent." The same authority mentions the case of a gentleman who always crossed the right leg over the left in bed : his infant daughter did the same from birth. "This boy" (says Dr. Holmes) "sits with his legs crossed, just as his uncle,

whom he never saw, used to sit ; his grandfathers both died before he was born, but he has the movement of the eyebrows which we remember in one of them, and the gusty temper of the other." Grace and elegance of motion seem to be the birthright of some families ; of this, the family of Vestris will furnish an example. As a part of the motor functions, we may, in passing, allude to the heritage of voice so frequently observed, — also, though perhaps somewhat out of place, to the heritage of loquacity ; children born of very talkative parents are usually so themselves, — they talk for the sake of talking, apparently moved by an elastic impulse that they cannot control. M. Lucas relates an instance of a servant-girl, who talked incessantly either to others or to herself, until it was found necessary to dismiss her ; when she exclaimed : " Mais, monsieur, ce n'est pas ma faute, ce n'est pas ma faute : cela me vient de mon père, dont le même défaut désespérait ma mère, et il avait un frère qui était comme moi."

Near me is seated a visitor from a distant continent, where she was born and educated. The portrait of a remote ancestress, far back in the last century, hangs upon the wall. In every feature, one is an accurate presentment of the other, although the one never left England, and the other was American by birth and half parentage. My own children are continually startling me by reproducing the very words, gestures, and motor tendencies which were my own forty years ago.

The resemblance of internal organization is fully as striking as that of external form between parents and children, though of course not so plainly recognizable. It is observed, however, in the hereditary liability to certain forms of disease or functional derangement : these are, according to Portal, apoplexy, epilepsy, mental aberration, hemorrhages, special inflammations, and other

disorders arising from hereditary superabundance of blood,—derangements of the liver, and of the lymphatic and nervous systems, producing their appropriate morbid effects. To some of these I may have occasion to refer; here I quote for purposes of illustration a remarkable case of hereditary hemorrhage or bleeding, as indicating transmission of internal organization. It is related by Dr. Riecken :—

“These cases occurred in the principality of Birkenfeld, in Oldenburg. The parents had never been subject to hemorrhage, and the father, E. P., was living in good health in his eighty-sixth year at the time of the publication of the narrative. The couple had twelve children, five sons and seven daughters, of whom three boys and one girl died of hemorrhage. Their youngest daughter, *who had never suffered from the disease*, married a stout, healthy man, and had six children, four boys and two girls, of whom three boys died of hemorrhage.”

To the physician the knowledge of family tendencies is all-important. A very instructive instance occurred some time ago in my own experience. A gentleman had severe haemoptysis at twenty-one, which continued some years. It ceased, and he lived until seventy years of age. His son was similarly affected at the same age, and is still living, near seventy. The family of the latter have each one, as they approached that period of life, been affected either in the same way, or one equivalent. These symptoms, which in other persons would have borne the very gravest significance, were seen by the light of the family history to be only transitory and comparatively unimportant phenomena, and were as such explained to the parents, to their great consolation.

It is scarcely necessary to remark, that feebleness and force of constitution are, as might be expected, generally hereditary.

Fecundity is also hereditary. M. Girou gives some remarkable illustrations of the prolific tendencies of certain families. One mother had twenty-four children ; of these, five daughters had forty-six children, and one grand-daughter had sixteen. I am acquainted with several generations of one very prolific family ; in one branch of it *twenty-two children* were born to the same father and mother in less than fifteen years. Dr. Virey gives an account of families in which the tendency to producing twins is strong ; in one, two twin brothers had repeatedly twins in both their families ; and the first wife of one being dead, the second had twins also. Osiander relates still more extraordinary facts, but I cannot dwell longer upon this part of the subject.

Idiosyncrasies are notoriously hereditary ; in some entire families the slightest amount of opium or of mercury acts as a virulent poison ; in one family mentioned by Zimmerman, coffee produced the effect of opium, whilst this was inert. Montaigne, in his quaint style, alludes to his own and his family's idiosyncrasy of a dislike to physic and physicians. One of his ancestors was assured that if he would not have some assistance he would die. Alarmed at this sentence, he answered, "*Je suis doncques mort!*" Montaigne considers that his own dislike to medicine descended from this person. Longevity evinces a tendency to run in families ; a large collection of cases illustrative of this point may be found in M. Lejoncourt's "*Galérie des Centenaires.*" I will only quote two or three instances. In a marshy country, near the Rhone, lived five persons, brothers and sisters, of the same father and mother, whose united ages amounted to 430 years ; the eldest was ninety-two, and the others followed alternately, male and female, at intervals of three years each exactly. At the time of the account being written, all were in good health.

M. Lucas mentions Madame de Montgolfier, in Paris, as still full of life, aged 110 years, and the mother of living children of more than eighty. A well-known literary character, M. Quersonnières, was still alive in 1842, aged 114, in perfect enjoyment of his faculties. He said : " My family descends from Methuselah ; we must be killed, to die; my maternal grandfather was killed by accident at 125 years of age, and I," he added, smiling, " invite you to my burial in the next century." The facts connected with hereditary longevity are sufficiently well ascertained to have become an important element in the calculations of the actuaries for insurance societies.

Departures from the specific type of the race, either by excess or arrest of development, are transmissible by generation. That singular monstrosity called *albinism*, consisting in an absence of coloring-matter from the skin, hair, and eyes, to which all races of men, black, white, or yellow, and many animals are subject, is often hereditary ; although, in obedience to the law of Diversity, by which nature is enabled to restore the primitive type, the children of albinos with another stock are often without trace of that affection. Melanism, the converse of albinism, or the excess of coloring-matter in the skin, sometimes a normal and sometimes a morbid occurrence, is subject to the same laws as regards its propagation. Other arrests of formation, such as hare-lip, and imperfections of the spinal column (*spina bifida*), are also often transmitted from parent to child. Of all these ample illustrations may be found in Buffon, St. Hilaire, and the special treatises on monstrosities.

Superfluity of parts or organs, as the presence of six fingers or six toes on each extremity, is not a very uncommon occurrence, and usually is observed for two or three generations. Sir A. Carlisle relates several instan-

ces of this nature, and Pliny also noticed it amongst the Romans. Lawrence remarks on these anomalies, that "if the six-fingered and six-toed could be matched together, and the breed could be preserved pure by excluding all who had not these additional members, there is no doubt that a permanent race might be formed, constantly possessing this number of fingers and toes."

With regard to accidental physical defects, such as the loss of a limb or an organ, the ordinary rule is, that such defect is not propagated, yet instances are not wanting where such is the case. Mr. Whitehead<sup>6</sup> relates that the father of three healthy children lost a limb by an accident in a coal-mine, and the next child born to him had shortening and defective power in the corresponding limb. M. Pichard relates that a stallion which had gone blind from disease had offspring which all went blind before they were three years old. This, however, cannot be considered as the propagation of an *accidental* defect, but rather the transmission of a distinct organic tendency to special disease. It is said that horses "marked during successive generations with red-hot iron in the same place, transmit the visible traces of such marks to their colts." Every modification of the senses is liable to reproduction, — blindness, long or short sight, quick or slow hearing, absence or acuteness of smell, &c.; particular tendencies also in the indulgence of the tastes, and special idiosyncrasies, are family heritages. St. Simon relates, in his "Memoirs," that Louis XIV. was voracious and gluttonous to an extreme, and that all his family inherited the tendency from him. M. Lucas says that he is acquainted with a family who *never drink* water in any form, and have the strongest repugnance to *all fluids*. Disgust to particular food runs also in families. The authority last quoted relates, amongst other instances, one in which, from generation

to generation, there was the most unconquerable aversion to the taste, or even smell, of cheese. Some have an equally unaccountable inability to eat any animal food, a tendency which is hereditary : of this an instance is mentioned in the *Gazette des Tribunaux*, 1844. The most frightful perversions of taste are likewise transmissible from parent to child. Boethius mentions the case of a young girl whose father had the horrible propensity of eating human flesh. The father and mother were both burned to death before the girl was a year old ; the girl was brought up in plenty and amidst respectable people, yet she also gave way to this disgusting and unnatural practice.

I pass briefly over these evidences of corporeal and sensorial inheritance, as little likely to be contested, in order to be able more fully to enter upon the more important branch of the subject, and the one which is most warmly disputed, — the inheritance of intellectual and moral qualities.

Reproduction may be considered in three lights, as regards the species, the race, and the individual or family. The psychical qualities of *the species*, it will readily be admitted, are constant, — as constant as the organization. The dog is always a dog in its instincts and its intelligence, and never a squirrel or a sheep ; the bee is always a bee, and never assumes the modes of life of the spider. In regard to races, there is always the same well-marked difference between their instinctive and rational endowments. Though descended from one common stock, the spaniel, the pointer, and the shepherd's dog have different instincts, each one adapted to a special end, one never naturally adopting the other's habits. Mr. Knight says that the young terrier shows every mark of anger when it first sees a polecat, whilst the spaniel looks on with indifference, but will pursue

a woodcock at once. "A young pointer which had never seen a partridge stood trembling with anxiety, its eyes fixed, its muscles rigid, when conducted into the midst of a covey of these birds." The buffalo, the ox, the bison, all are distinct in their psychical nature; and the African and Asiatic elephant differ so completely in mental manifestations, that, although so similar in organization, they have been considered as distinct species. The various races of men have characteristics quite as distinctly marked; the red, the white, the yellow man, all comport themselves in a different and strikingly contrasted manner, when brought into contact with the white man and his civilization. Neither will these differences disappear by custom; the sombre red man and the volatile negro are alike incapable of assimilation to the European nature. But *races consist of aggregations of individuals*; it is clear, therefore, that to a certain extent individuals have the power of transmitting their own specific psychical nature. How far this extends to the minute traits of special character is the object of our inquiry.

1. *Has the education of the parent any influence over the capacity of the offspring?* — The weight of evidence direct and analogical is strongly in favor of an affirmative answer.

In domestic animals the phenomena appear to be clear and indubitable in their testimony. Dogs descended from parents that have been trained to certain pursuits assume the same habits either without education, or with very much less than those whose parents had been neglected. The pointer whose parents have for generations been trained for purposes of sport, will take to pointing almost without any instruction, further than what is necessary to quell the exuberance of youth; whilst one descended from parents that had not been so

exercised, will require great care and pains to teach it its duties. The same is observable in quite as marked a degree in the sheep-dog. Dogs that have been trained to hunt the peccari have offspring that seem from the first attempt to understand the proper (and very peculiar) mode of attack, whilst another and much stronger dog is destroyed at once by this savage creature. A St. Bernard dog, born in London, is said to have begun to track footsteps in the snow, after the manner of its parents. It is said that dogs do not bark (but only howl) in the wild state, and that the bark is an imitation of the human voice : but the pup of the tame dog barks, though it may never have heard a similar sound. It is also asserted that birds on an uninhabited island show no fear of man ; but the young of those born amongst man always fly from him. Other illustrations might easily be accumulated from other species ; but these are sufficient to indicate the great probability that in animals not only original aptitudes and faculties are inherited, but also such as are acquired by education. A writer in the *Westminster Review*, 1858, gave an amusing and striking instance of the transmission of acquired habits. He says : "The writer had a puppy, taken from its mother at six weeks old, who, although never taught to *beg* (an accomplishment his mother had been taught), spontaneously took to begging for everything he wanted, when about seven or eight months old ; he would beg for food, beg to be let out of the room, and one day was found opposite the rabbit-hutch, *Begging for the rabbits.*"

2. *But is the case the same with men as with animals ? —* This is denied by some writers, as has been before remarked ; not because of any lack of conclusive evidence, but because an acknowledgment of the principle would necessitate logically the recognition of moral heritage,

which they are determined not to admit. M. Lordat writes as follows : " L'éducation de l'homme ne s'applique point à la même puissance que l'éducation des bêtes ; tandis que les bienfaits de l'éducation profitent, chez l'animal, à l'éducation de ses descendants, les avantages de l'éducation d'un homme ne sont d'aucune utilité physiologique pour son fils ou pour sa postérité ; quelle que soit l'origine d'un homme, quels qu'aient été mérites de ces ancêtres, quoi qu'aient pu faire la société et l'opinion pour les illustrer, son éducation particulière ne peut pas être moins laborieuse que celle de ses aïeux." Whether this be scientific or not may admit of doubt ; its non-accordance with observation will appear. The question becomes one of fact, experience, or testimony, to which we must appeal. The child of Indian parents will naturally adopt forest habits to an extent and with a skill altogether foreign to a white child, although both may have been brought up from earliest infancy in the same manner. At their first association with civilized people, savages and their children show an untamable and unteachable spirit ; but after one or two generations, during which efforts at instruction have been partially successful, the young children indicate not only more docility but much greater aptitude to learn. Dr. Moore observes, that " our education may be said to begin with our forefathers. The child of the morally instructed is most capable of instruction, and intellectual excellence is generally the result of ages of mental cultivation. From Mr. Kay Shuttleworth's examination of juvenile delinquents at Parkhurst, it appears that the majority were deficient in physical organization, and this, no doubt, was traceable to the parent stock." Sir A. Carlisle says that many years since an old schoolmaster had told him that, in the course of his personal experience, he had observed a remarkable difference in the capacities of children for

learning, which was connected with the education and aptitude of their parents ; that the children of people accustomed to arithmetic learned figures quicker than those of differently educated persons ; while the children of classical scholars more easily learned Latin and Greek ; and that, notwithstanding a few striking exceptions, the natural dulness of children born of uneducated parents was proverbial. Mr. Knight, a very high authority upon questions of this nature, in a letter to Mr. Alexander Walker, says :—

“ I, seventy years ago, heard an old schoolmaster remark, in speaking of my late brother’s (the well-known Mr. Payne Knight) great facility of learning languages, that, in fifty years’ experience, he had never known a child of wholly illiterate parentage and ancestry (such being at that time very abundant) who could learn languages. Being in my parish church, about ten years ago, a little girl, in repeating her catechism, got through her part in half the time that her companions did, and without missing or hesitating about a single word. She was wholly unknown to me ; but I whispered to Mrs. Knight, ‘That girl is a gentleman’s daughter.’ And so she proved to be. . . . I believe that most of the experiments in breeding which have been accurately made and accurately reported have been made either by Sir John Sebright or by myself ; and it is somewhat singular that we both descend from the same grandfather, his mother having been a daughter of my father’s brother. We were, however, unacquainted in early life, and neither of us was influenced in any degree by the other in our pursuits. . . . It is, I think, important, that the minds of the ancestry should have been exercised in some way ; and I think the hereditary powers will generally be found best calculated to do that which the parents, through successive generations, have done.”

Burdach, a most profound physiologist, agrees that the development of the intellectual faculties of the parents renders the children more capable of receiving education. And M. Girou says that "acquired capacities are transmitted by generation, and this transmission is more certain and perfect in proportion as the cultivation has extended over more generations, and as that of one parent is less opposed by that of the other. Children receive from their parents, with the impress of their habits, all the shades of capacity, aptitude, and taste which have been the fruit of such habits."

I cannot see any reason for acknowledging that bodily habits and faculties are hereditary, and denying it in regard to those of the mind. Testimony is strongly in favor of the view, and all analogical reasoning tends to the same conclusion. It must be confessed, however, that in detail and in individual cases, there is not that kind and amount of regularity which bespeaks *a law*: the law of Diversity is very operative in matters pertaining to the intellect; wise men have often fools for their children, and talent often arises from a family remarkable only for mediocrity; there are, nevertheless, phenomena well worthy of careful consideration.

Not, perhaps, strictly in place, yet as affording an interesting illustration of the power of habit in successive generations in influencing organization, I quote this instance from Mr. Knight: "The following circumstance, which is at least very singular, leads one to suspect that the kind of language used by any people through successive generations might change and modify the organs of speech, though not to an extent cognizable by the anatomist. A celebrated French civil engineer, M. Polonceau, visited me some years ago, bringing with him a young French gentleman who spoke English eloquently, and perfectly like an Englishman, though he had been in

England only two years, and, as he assured me, knew nothing of the language previously, nor had ever heard it spoken. I asked him whether he could pronounce the English name Thistlethwaite, and he instantly pronounced it most distinctly and perfectly. The next day, when talking of other matters, he said that he had some Irish relations, and it appeared that his grandmother, on the female side, whom he had never seen, was an Irish woman. Hence arose, I do not at all doubt, his power of so readily pronouncing the word I had prescribed. A French gentleman at Paris boasted to me that he could pronounce correctly any English word. I proposed Thistlethwaite to him, when, instead of trying, he exclaimed, '*Ah, barbare!*'"

Amongst the innumerable intellectual grades occupied by humanity, from the feeble light which barely illuminates the first degree above idiocy, to the lofty capacity of the poet or the philosopher, there is a *tendency* to the transmission of similar qualities to the offspring,—an *indication* of a law, however numerous the exceptions. The idiot almost always engenders<sup>7</sup> idiots; no man of talent ever had an idiot or an imbecile for his father or mother; cretinism, always attended by a low intellectual development, always produces the same, unless one of the parents be vigorous and healthy enough to modify the tendency. Imbecility, independent of cretinism, also is transmitted from generation to generation. Haller cites the instances of two ladies of noble family who were nearly imbecile, but were married for their wealth; and when he wrote, a century afterwards, the same grade of intelligence was manifest in the fourth and fifth generations. It is matter of daily observation, that the ordinary run of children have about the same intellectual capacities as their parents, one or both; the education may be different, but the original nature seems to be about the same standard.

This does not apply to those instances where continual culture for successive generations tends to exalt the intellectual powers. As we ascend the scale, we cannot fail to perceive how comparatively rare it is to meet with but one distinguished person in any given family. Many of our statesmen have illustrated this position ; — the legislative faculty has descended from father to son in very many cases in our history. It would not be difficult to point to instances in our own government, where the forms and practice of legislation have been intuitive, in as remarkable a degree as in the two Pitts and the two Foxes. The two Scaligers, the two Vossiuses, the two Herschels, the two Coleridges, the Malesherbes, the father and son Montesquieu, the two Sheridans, and the Kemble family, may furnish additional illustration as to how frequently talent is allied to talent. Mirabeau, the father, contained, so to speak, Mirabeau the tribune. The family of *Æschylus* numbered eight poets. The father of Torquato Tasso had the *gift*, as his son had the *genius*, of verse. This sort of succession of gift or ability in the family, followed by genius in the son, is not rare. Flaxman was the son of a moulder of plaster casts. Thorwaldsen, the rival of Canova, was the son of a poor sculptor. Raphael's father was himself a painter. The mother of Vandyke had a talent for painting. Parmigiano was of a family of painters ; so was Titian ; so is Horace Vernet. The father of Mozart was a violinist of some reputation ; his children inherited part of his talent. Beethoven was the son of a tenor singer. A whole host of composers have emanated from the family of Bach.

I would refer those who are disposed to pursue this branch of the subject further, to three papers on "Hereditary Genius," by Francis Galton, F. R. S., in *Macmillan's Magazine*. The last appeared in March, 1869.

In these will be found an overwhelming accumulation of facts, and some most interesting views and comments upon them.

There is a circumstance worthy of note concerning the scale of intellectual development, viz. that the *extremes are solitary*, i. e. do not transmit their characteristics. The lowest grade of intellect, the perfect idiot, is unfruitful ; the highest genius is unfruitful, as regards its psychical character : true genius does not descend to posterity ; there may be talent and ability in the ancestry, and in the descendants, directed to the same pursuits even ; but from the time that the development culminates in true genius, it begins to wane. I am acquainted with a family descended in the third generation from a true musical genius. Of the numerous branches, scarcely one is deficient in some amount of musical taste and ability, but none have a shadow of the *genius* of the grandfather.

The development of intellectual gifts has been by some supposed to follow a law of increase, culmination, and decay in races, strictly analogous to that which is observed in individuals ; and as it is seen in these latter to rise and decay even before the decay of the body, so in the former it seems to culminate and to wane before the extinction of the race. The learned author of the "Theatrum Ingenii Humani" applied this view to the phenomena of the ascension and the falling away of certain dynasties. "It is worthy of remark," he says, "that the ascending movement of the higher faculties of a great number of founders of races generally is arrested at the third, rarely continues to the fourth, and scarcely in a solitary instance passes beyond the fifth generation." Illustrations are taken from the race of Charlemagne, of Capet, and of the Guises. "Atque ideo quidem certa est illa paternæ indolis in posteritatem transitio ut, in claris

familiis, illa suos veluti natales habeat, et sumpto incremento, adolescat et, senior confecta, deficiat et commoratur. Eximit se subito aliqua de vulgo familia, et secundus gratiae auris, ad conspicuam lucem, ab ignotis tenebris emergit. Eadem, statim obsolescente venustatis splendore, vix majorum gloriam tuetur." Thus illustrious gifts die from out the family, which only lives now in the glory of its ancestry ; and whilst ancient races decay, new ones arise to preserve the equilibrium of society.

3. *Is the moral nature of man subject to hereditary law ?*

— Yes, with the limitations before hinted at ; the propensities and tendencies to particular forms of virtue and vice are hereditary, but *not the acts themselves* ; man's freedom is not obliterated, but he is destined to a life of more or less strife and temptation, according as his inherited dispositions are active and vicious, or the contrary. Every sane man knows that, despite of allurement or temptation, he can do or leave undone any given act ; he is therefore *free*, but his freedom is more or less invaded, in accordance with the laws under consideration. As it is well and tersely remarked by Mr. Lecky :<sup>3</sup> "There are men whose whole lives are spent in *willing* one thing and *desiring* the opposite."

It is well known that the temper of horses and dogs is constantly transmitted. Buffon remarked that an angry, restive stallion produced foals of the same disposition, even manifested in the precise modes of biting and kicking, &c., which distinguished the parent. The Hungarian stallion, the Savage, and Jupiter, both produced colts as wild as themselves. Dogs inherit the temper of their parents, and even in some cases their unnatural fears, as when a pointer fears the sound of a gun, of which an instance is mentioned by M. Girou.

As in the case of intellect, so, and on the same author-

ity, it is disputed that the laws of animal *morale* are any guide to those of man. Where analogy is rejected, it is necessary to appeal to direct testimony, and this will not be found wanting. There are those who still maintain the *tabula rasa* theory, that all children are born alike, morally and intellectually ; and that the differences between them afterwards result from the different physical and moral media by which they have been surrounded. By rejecting and denying facts and observations, this position might be supported ; but the careful observer can no more accept this theory, than he could believe that all children were born equally viable, and with equal strength of muscle or constitution.

Children inherit the evil tendencies of their parents, and not unfrequently the mark of these tendencies is written in evident characters on the organization. Fernelius truly observes, that "it is the greatest part of our felicity to be well born ; and it were happy for humankind if only such parents as are sound of body and mind should be suffered to marry" ; and Lemnius asserts that the "very affections follow their seed, and the malice and bad conditions of children are many times wholly to be imputed to their parents." Speaking of the House of Brunswick, Lord Granville said : "This family always has quarrelled, and always will quarrel, from generation to generation" ; a fact which he attributed to some natural peculiarity of the illustrious race. Lord Macaulay cannot "quite admit his explanation ; but the fact is indisputable. Since the accession of George I. there have been four Princes of Wales, and they have all been almost constantly in opposition."<sup>9</sup> All the passions appear to be distinctly hereditary ; anger, fear, envy, jealousy, libertinage, gluttony, drunkenness ;—all are liable to be transmitted to the offspring, especially if both parents are alike affected ; and this, as has often

been proved, not by force of example or education merely, but by direct constitutional inheritance.

One of the most important of these, and the most easily illustrated, is that of the heritage of drunkenness. *Ebrii gignunt ebrios*, says Plutarch. Gall relates the case of a Russian family where the father and grandfather had both died prematurely from the effects of intoxication, and the grandson manifested from the age of five years the most decided taste for strong liquors. M. Girou relates instances where the tendency was transmitted through the mothers. A recent writer in the *Psychological Journal* says: "The most startling problem connected with intemperance is, that not only does it affect the health, morals, and intelligence of the offspring of its votaries, but *they also inherit the fatal tendency, and feel a craving for the very beverages which have acted as poisons on their system from the commencement of their being!*" Some illustrations are given by the same writer. Mr. J—— was an habitual drunkard: his wife also had a *stomach complaint*, for which she took spirits: her medicine was never neglected. Both died confirmed drunkards, and all the children did so likewise. They said, "We can't help it; we inherit a strong love for rum or gin." One bound himself by a heavy penalty, but after some months' abstinence broke out, saying that the *craving was actual torture, and he could not help himself*. Mr. B——, of Yorkshire, and his wife, were scarcely ever sober: the lady died early of *delirium tremens*, but the husband lived long in spite of his tendencies. Out of a large family of children, only one escaped the taint: the eldest son, an inveterate drunkard, committed suicide; and all the others came to an untimely end. The only daughter was on one occasion brought home by the police in a state of intoxication: the shock was too great for the old man, and he did not survive it.

A frightful additional testimony to the ineradicable nature of an inherited tendency to drink is given by M. Morel, than whom no living writer has entered more deeply into these important investigations. He says : “*I have NEVER seen the patient cured of his propensity whose tendencies to drink were derived from the hereditary predisposition given to him by his parents.*” Mr. W. Collins stated before a Parliamentary Commission, as the result of his experience of drunkards, and as a “*well-established physical fact,*” that the drunken appetite, when once formed, “never becomes completely extinct, but adheres to a man through life.” Dr. Hutcheson’s experience is to the same effect. He remarks of the chronic form : “I have seen only one case completely cured, and that after a seclusion of two years’ duration. In general it is not cured ; and no sooner is the patient liberated than he manifests all the symptoms of the disease. Paradoxical though the statement may appear to be, such individuals are sane only when confined in an asylum.” The annals of vice teem with illustrations of this fearful inheritance : in selecting cases there could be no difficulty, save that of choice. I am here only concerned to indicate the *fact* of this inheritance : I shall hereafter return to it, to point out the moral and physical transformations produced in successive generations under its influence. I have before remarked upon the heritage of gluttony. The passion for play is inherited, like other tendencies, although it is difficult in some of these cases actually to demonstrate that evil example has not a great share in the propagation of the vice. A lady, spoken of by Da Gama Machado, was strongly addicted to play : she died of consumption, leaving a son and daughter, both of whom inherited the same passion, and died of the same disease. Libertinage is an almost constant heritage : — <sup>10</sup>

"*Casta refert castæ genitricis filia mores,  
Lascivæ nunquam filia casta fuit.*" . . . .

The tendency to infractions of the laws for the protection of life and property is also transmissible by generation. The annals of our police courts teem with evidence of the truth of this statement; and, in many of the instances related by writers, the circumstances have been such as to exclude the argument of example or education. M. Lucas quotes the case of a woman who, during her pregnancies, was always affected with a monomania for robbery: all her children inherited the propensity. We cannot multiply instances, but must find room for a sketch of one family residing in the department of Bayeux. One had been condemned to the *travaux forcés* for life for assassination. Five remained,—three brothers, one sister, and her husband. These were all convicted ultimately of having lived for years upon the proceeds of their various robberies, and were condemned accordingly. An inquiry into the antecedents of this family showed that the father and the grandfather had both been hung; their uncles and an aunt had long been in *les bagnes*; one of their nephews had been similarly condemned; and the rest of the family followed the same destiny. Of late years there has been the daring attempt made in France to found an institution for the reformation of the children of criminals, and it is said that the attempt has been wonderfully successful. M. Lucas expresses his conviction that, in these heritages of crime, example and education are only secondary and auxiliary causes, and that the true first cause is hereditary influence; adding that, as education, example, and compulsion would fail to make a musician, an orator, or a mathematician, in default of the inherited capacity, so they would fail to make a thief. Dr. Steinau relates from his personal experience a re-

markable instance of theft hereditary for three generations. P—— was known in Dr. S.'s native town by the name of "*The Thief*," a soubriquet which he in some degree acknowledged. Afterwards his son, who had a profitable, even lucrative trade, and was quite beyond all necessity for theft, evinced a strong inclination to steal sundry small articles. His son, grandson of the original *thief*, began as early as three years old to steal eatables, far more than he could eat; then he took small coins, and afterwards larger sums; and when the account was written he had become an expert pickpocket, and was in his fourteenth year committed to the House of Correction.

It is the same with regard to crimes attended with violence; but we must pass over the details. Aristotle, in the seventh book of his "*Ethics*," relates "the case of a man who defended himself for beating his father, because (said he) 'My father beat his father, and he again beat his; and he also' (pointing to his child) 'will beat me when he becomes a man, for it runs in our family.' And he that was dragged by his son, bid him stop at the door, for that he himself had dragged his father so far."

There is no form of heritage more remarkable than that of the tendency to suicide, without any other marks of aberration of intellect. Dr. Winslow relates the case of a family where all the members exhibited, when they arrived at a certain age, a desire to commit self-destruction; to accomplish which the greatest ingenuity and industry were manifested. Dr. Gall relates a very striking instance of seven children of one man, who all enjoyed a competency and good health, yet all possessed a rage for suicide, and all yielded to it within thirty and forty years. "Some hanged, some drowned themselves, and others blew out their brains." Many other examples

of the same tendency are brought forward by the same writer. I may add one case to the above from my own experience. Sitting one day with an acquaintance, I noticed some depression in his spirits. After a prolonged silence, he broke out into the following dreary attempt at conversation : " My grandfather hung himself, — my uncle took poison, — my father shot himself, — I shall cut my throat ! " The facts were correct ; but constant surveillance prevented the sequel in his own history. This tendency to suicide is frequently, though by no means invariably, allied to the heritage of drunkenness. The *Gazette des Tribunaux* relates a deplorable case : " Four brothers inherited the passion for drink, which they all indulged to excess. The eldest drowned himself, the second hung himself, the third cut his throat with a razor, and the fourth threw himself out of an upper window, but recovered from his injuries sufficiently to make himself amenable, by his violence of conduct, to a criminal accusation."

Although the affairs of men are so governed that crime is not permitted to become a perpetual and inalienable heritage to all succeeding generations, although even upon thrones a good son sometimes succeeds a bad father, yet history furnishes sufficient illustration of the *tendency* of particular qualities to adhere to particular families. Alexander VI. and his children the Borgias were notorious for their crimes ; as were also Sextus VI. and his children. The epithets applied to the former by the poet, —

" Leno vorax, pathicus, meretrix, delator, adulter," &c.,  
and to one of the latter, —

" Fur, scortum, lœno, mœchus, pædico, cynœdus  
Et scurra, et phydiken" . . . .

prove either a remarkable succession of criminal pro-

pensities, or a very great and varied power of vituperation in the writer. The atrocities of the Farnese family are utterly unfit to record. The Medici were all remarkable for thirst for power and authority ; the Viscontis were all cruel and vindictive, — they had the doubtful credit of inventing the “forty days’ torture.” The family of Charles IV. of Germany were noted for avarice ; Voltaire epigrammatically remarks that he “vendait en détail l’empire qu’il avait acheté en gros.” How pride and an overweening idea of the “divine right” of kings, combined with obstinacy and judicial blindness, were the prerogatives of all the Stuart family, and caused their ruin, is matter of well-known history. Voltaire says that “all the line of the Guises was rash, factious, insolently proud, and of most seducing politeness of manner.” St. Simon notices as the characteristics of the Condé family, intrepidity, warlike skill, and brilliant intellect ; together with “odious vices of character, malignity, avarice, tyranny, and insolence.”

There is a singular modification of this law of heritage, known as *atavism*, in accordance with which the individual does not resemble either parent, but the grandparent, or some ancestor in either the direct or collateral line. This was noticed by Lucretius : —

“Fit quoque, ut interdum similes existere avorum  
Possint, et referant proavorum sæpe figuræ,  
Propterea, quia multa modis primordia multis  
Mista sua celant in corpore sæpe parentes,  
Quæ patribus patres tradunt a stirpe profecta.  
Inde Venus varia producit sorte figuræ;  
Majorumque refert vultus, vocesque, comasque.”  
*De Rerum Naturâ*, lib. iv.

This law obtains equally in natural and morbid inheritance, as will appear afterwards. Dr. Prichard relates an instance illustrative of this point : a black woman was confined of a white child, and was there-

upon in great fear of her husband, and tried to keep the child from his sight as long as she could. When he saw the child, and observed her fear, he said : " You are afraid of me because my child is white ; but I love it the better for that, for my own father was a white man, though my grandfather and grandmother were both as black as you and myself ; and although we came from a place where no white people were ever seen, yet there was always a white child in every family that was related to us." Mr. Jefferson has collected seven instances of this nature. Lady Hester Stanhope claimed a strong resemblance to her grandfather, Lord Chatham, both in bodily and mental organization. The likeness between cousins, the children of sisters especially, is often very striking, even when there is no very strong resemblance between the parents themselves. This is frequently manifested in feature, — but if not, it is then observed in manner, gesture, or some special aptitude. Two sisters of my acquaintance have each of them a daughter. The child of the elder sister is not very like her own mother ; but strongly resembles her cousin, and has the voice of her aunt. Two other ladies have each a son ; — there is little likeness between the sisters ; yet the boys are so very much alike, that they are constantly mistaken, one for the other. In like manner, amongst our ancient families, likeness both of feature and character is perpetually reproduced.

We are now better prepared to inquire into the essential nature of the law of diversity or variety, and to expound more fully the view before briefly alluded to, — that this law is not in nature opposed to, or different from, that of direct heritage ; but is, in fact, due to the very constancy and energy of operation of this latter ; whereby not only the established formation and character of any individual are transmitted to the offspring,

but also the *temporary*, *transitory*, *accidental*, and *morbid* modifications of structure or function which supervene upon what is considered to be the normal state. We shall find reason also to believe that other forms of diversity are due to the particular forms of vice or evil habits practised by the parents, to the occurrence of improper or consanguineous union, and lastly (a point which we do not remember to have seen noticed), to the propagation, not so much of the actual condition as of the potentialities or possibilities of the organization. All these require brief illustration: we will for the sake of convenience take the last, as requiring explanation, before the others.

A pair of perfectly white rabbits, descended from white parents, with no spot of color upon them, — such as albinos, — will always produce white offspring, illustrating perfectly the hereditary law. But supposing either parent to have upon any part of the surface even so much as a few colored hairs, — for instance, the smallest spot of black or gray upon the back, — it is almost certain that amongst a large litter of young ones, one or more will be in *great part* black or gray; — quite certain that some of them will possess much more color than the parent. This is an apt enough illustration of the law of variety; yet when examined it is but in effect the direct inheritance of one of the qualities of the parent, the chromogenic or color-producing power, which *potentially* existed in the parent, but was *actually* developed in the young one. The qualities of the parent are unevenly divided amongst the children, yet appear to be generally distributed amongst them. What is said of color might easily be further illustrated by peculiarities of organization, &c. And, as we have seen the strictest analogies prevailing between the heritage of physical and that of intellectual and moral qualities, it is not dif-

ficult to understand how varieties in these latter may originate. It must be confessed, however, that this hypothesis only seems to remove the difficulty one step backwards.\* This is what we understand by "propagation of the possibilities of the organization." But we have said that transitory conditions are liable to transmission; and thus we observe youth, maturity, age, and precocity reproduced in the offspring. The young of animals not yet fully developed are small and stunted, incapable of perfection: it is observed in foals, lambs, goats, calves, &c. born of very young parents; they re-

\* It is conceivable that the germ of intellectual or moral excellence in any one given individual may, from the unfavorable influence of surrounding circumstances, be prevented from attaining any degree of development; and remain latent, to be transmitted to the offspring, and then make its appearance as an entirely new phase or variety of character: but the *origin* of such differences still remains to be accounted for, and probably only admits of explanation by a very liberal and comprehensive reception of the theory of the transmission of transitory and accidental conditions of mind or physical organization. It is not difficult to conceive why a child should be unlike either parent, as the *re-presentative* power of one organism may be counteracted or modified by that of the other, where the constitutions or temperaments of the parents differ greatly from each other. But this would scarcely suffice to account for the differences of the children amongst themselves. A chemical illustration of this point may seem fanciful, and perhaps be in effect only the appealing to one inexplicable phenomenon to explain another; yet the tracing of even obscure analogies is never without some interest. It is known that certain bodies are perfectly similar (*isomeric*) in chemical constitution, which yet differ completely in their physical appearance and general relations. Thus, cyanuric acid is a crystalline body, easily soluble in water or acids; cyamelide is in appearance like magnesia, and is insoluble in water or acids; hydrated cyanic acid is a highly volatile acrid fluid, instantly decomposed by contact with water: yet these three, on analysis, yield precisely the same elements, and in the same proportions. Liebig states that albumen, fibrine, and casein are exactly similar in ultimate composition; so it is also with some of the volatile oils, which differ completely in their external appearance and relations. Is it altogether impossible that the same organisms may communicate equal parts of their nature to their offspring, which yet, under the influence of an *organic isomerism*, may be relationally different?

main weak, lymphatic, and functionally inert. In our own species Aristotle remarked that, in those cities of Greece where it was the custom for young people to marry before maturity, the children were puny and of small stature. Montesquieu observed the same fact : the fear of conscription induced great numbers of young people to marry long before the proper period : the unions were fruitful, but the children were small, wretched, and unhealthy. According to M. Lucas, the same occurred in 1812 and 1813.

Maturity also transmits its characteristics to the progeny : the stag born of mature parents comes to its full growth and the enjoyment of its functions much earlier than those born of parents still young. There is no doubt whatever that the same is the case in our own species. Old age is also in many cases a direct heritage. According to Columella, lambs born of old parents have but little wool, and that little, coarse ; they are said also to be often sterile ; foals born of old parents are also similar in many respects to them ; and their hair soon grows gray or white. Burdach states that, amongst men, some of the children born of very old parents have from birth the marks of senility, with a liability to senile affections.<sup>11</sup> The phenomena of bodily and mental precocity may probably be due to a direct inheritance of the *present* state of the parents ; but any explanation founded on such an hypothesis would necessarily be obscure. Certain temporary physiological conditions appear to be heritable, for an account of which we must refer to special works on such subjects. With regard to all these states, Vallesius goes so far as to say that "non enim animal generat sibi simile secundum id quod fuit aut erit, sed SECUNDUM ID QUOD IN ACTU EST."

But of all the modifications of natural heritage, the most serious and important is the heritage of morbid

conditions ; and, although it would not be desirable in a popular essay to enter deeply into this part of the subject, it must necessarily claim some share of our attention. There are various forms in which disease may appear in the children, due to parental causes. The parents may be free from disease, yet produce unhealthy children, owing probably to some unfitness in the union ; these affections stamp themselves as hereditary, by affecting all, or nearly all, the members of the family. Sir Henry Holland mentions a family consisting of three sons and one daughter, all of whom had a paralytic attack before the age of forty-five, though neither of the parents had suffered from anything similar ; and another of a family where four children died in infancy from affections of the brain, without any of the relations having been so affected. I am acquainted with a large family, all of whom suffered when young from enlarged tonsils, and almost all of whom are short-sighted in the extreme, though neither father nor mother have experienced either inconvenience. At the Deaf and Dumb School in Manchester there were, in 1837, forty-eight children taken from seventeen families, of which the whole number of children was one hundred and six ; amongst these, only one parent was known to have been similarly affected. Sir Henry Holland, who also quotes this case, does not mention whether any of the ancestry were so diseased : deaf-dumbness appears, like many other affections, to have a tendency to miss the alternate generations. One of the most remarkable instances on record is that of two children presented to the Academy of Medicine in Paris, in 1844, both of whom were affected with a congenital disease of the skin, called *lepra* ; neither parent ever having had anything similar.

Another form of inheritance of disease is that where the children are affected with some transformation of the

disease to which the parents are victims ; as in the change of scrofula into rachitism, phthisis, and the like. A third is that of inheritance of *liability* to certain affections, as where entire families are prone to the exanthemata, and will occasionally have those eruptive disorders repeatedly, which usually only occur once during the lifetime.

In the direct heritage of morbid changes the most simple is that of deformity, or accidental deficiency of parts. The former is more frequent than the latter ; hunchbacked parents very frequently have children that become so early in life ; but limbs injured by accident not unfrequently affect the formation of the corresponding limb of the children. Larry relates that a general officer was hit on the collar-bone by a ball ; the middle of the bone was taken out, and when the wound healed there was an empty space, a loss of continuity in the substance of the bone. A daughter born to him after this had a similar defect. Blumenbach states that "an officer had been wounded in the little finger of his right hand, in consequence of which this finger forever remained deformed. He afterwards married, and all his children, male and female, were born with the like deformity in the same finger on the same hand." Innumerable instances illustrating the same point might be quoted. And yet, in the case of accidental defects or mutilations, the *general rule* holds good,—as we have before remarked,—that the individual does not lose the potentiality of the species, but propagates a perfect individual,—or, at least, perfect so far as regards the absence of these accidental deficiencies. Dr. Prichard wrote very positively on this subject at one time, but had occasion afterwards in some degree to modify his opinion :—

"Nothing," says he, "seems to hold true more generally, than that all acquired conditions of body, whether

produced by art or accident, end with the life of the individual in whom they are produced. Many nations mould their bodies into unnatural forms : the Indians flatten their foreheads ; the Chinese women reduce their feet to one third of their original dimensions ; savages elongate their ears ; many races cut away the prepuce. We frequently mutilate our domestic animals by removing the tail or ears ; and our own species are often obliged, by disease, to submit to the loss of limbs. After the operation of circumcision has prevailed for three or four thousand years, the Jews are still born with prepuces, and still obliged to submit to a painful rite. Docked horses and cropped dogs bring forth young with entire ears and tails. But for this salutary law, what a frightful spectacle would every race of animals exhibit ! The mischances of all preceding times would overwhelm us with their united weight ; and the catalogue would be continually increasing ; until the universe, instead of displaying a spectacle of beauty and pleasure, would be filled with maimed, imperfect, and monstrous shapes."

This is certainly true as to the general law ; but the instances above quoted, and those with which systematic works on such subjects abound, show that the law has numerous exceptions, and indicate the *possibility* of the transmission of even the most casual and fortuitous defect. Mr. Youatt observes, upon the breeding of horses : "The first axiom we would lay down is this, *Like will produce like*; the progeny will inherit the qualities or the mingled qualities of the parents. We would refer to the subject of diseases, and state our perfect conviction that there is scarcely one by which either of the parents is affected that the foal will not inherit, or at least the predisposition to it; *even the consequences of ill-usage or hard work* will descend to the progeny. We have had proof upon proof that blindness, roaring, thick

wind, broken wind, curbs, spavins, ring-bones, and founder have been bequeathed both by the sire and the dam to the offspring. It should likewise be recollected that, although these blemishes may not appear in the immediate progeny, they frequently will in the next generation. Hence the necessity for some knowledge of the parentage both of the sire and dam."

Amongst the external diseases, lepra, herpes, and ichthyosis are considered hereditary. Cophosis nervosa, or nervous deafness, cataract, and amaurosis are the most frequently hereditary of the affections of the special senses ; and, next to them, those very peculiar derangements of vision called *nyctalopia* and *hemeralopia* (day or night blindness). Cuvier describes a family in which this singular disease had been propagated for two centuries, and where, from intermarriage, chiefly with the males of this family, a great district (the *Commune de Vendemian*) had become seriously overspread with it. Of internal diseases it would be difficult to say which of them did not induce a liability to their reappearance in the offspring. I shall briefly allude to a few only. First, perhaps, in order of frequency and importance, so far as our own country is concerned, is the inheritance of the various forms of scrofula and consumption. If both parents be affected, we generally observe almost the whole of the children, sooner or later, taken off by some form or other of these protean complaints. If, on the contrary, one parent be of a healthy and vigorous stock, many of the children may escape ; but it is rare that all do so. There is also a most remarkable transformation observed in some of these cases, *that of a bodily to a mental affection*. A mother dying of or far advanced in consumption, at the birth of a child, does not always leave to that child the precise morbid heritage of her complaint ; but in many instances, — far too frequent to

be considered the result of accident or coincidence,—there is remarked, as the child grows up, a deficiency either in intellect or morals, which quite opposes any effectual culture : in intellect, there appears to be a power of expansion up to a certain very limited extent, *but no further*; in morals, the most frequent phenomenon appears to be a lack of perception of truth, and of the rules of social order and relationship.

Epilepsy and convulsive disorders generally inherit strongly in families,—as, in fact, do all organic or functional affections of the nervous system. In ancient times the legislature interfered to prevent the propagation of sundry of these diseases, and most severe and inhuman were the enactments made with this view, as the following passage from Boethius indicates : “ Morbo comitiali, dementiâ, maniâ, leprâ, &c., aut simili labe, quæ facile in prolem transmittitur, laborantes inter eos, ingenti factâ indagine, inventos, ne gens foedâ contagione læderetur ea iis nata, castraverunt ; mulieres hujusmodi procul a virorum consortio ablegârunt, quod si harum aliqua concepisse inveniebatur, simul cum foetu nondum edito, defodiebatur viva.” (Boethius, “ De Veterum Scotorum Moribus,” lib. i.) Gout, gravel, asthma, and apoplexy are amongst the most frequent forms of hereditary disease, all affecting, in many instances, the singular peculiarity of passing over one generation, and attacking the alternate ones only. A very inexplicable phenomenon connected with transmission is mentioned by Sir H. Holland, — hydrocele occurring in three out of four generations, the omission depending upon a female being the third in the series, in whose son the complaint reappeared. Of such a fact as this neither science in its present state, nor conjecture, can afford even a plausible solution or explanation. Sir Henry also mentions instances where the inability to distinguish colors, as blue and pink (color blindness), ran in entire families.

There is, however, scarcely any portion of our subject which bears so grave an interest as the heritage of mental affections, — the inheritance of an *unsound mind*. This we must understand in its most comprehensive sense. We have seen above how mental aptitudes, and even acquisitions, are transmitted from parent to child : we shall now see that mental defects and feebleesses are with even greater certainty and constaney entailed upon the offspring.. Insanity itself, in its defined forms, has universally been recognized as an hereditary disease. It appears to be more so amongst the rich than amongst the poor, although this may arise in part from the greater difficulty of ascertaining the facts amongst the latter. According to the zeal and accuracy with which the subject has been investigated, we find a greater prominence given to inheritance as a cause of insanity. M. Esquirol says that one half the cases amongst the higher classes, and about one third amongst the lower, have been inherited from parents or ancestors. According to another authority, seventy-seven per cent of the cases at the Bicêtre were hereditary ; and Dr. Burrows makes the proportion eighty-four per cent. Feuchtersleben thus writes :—

“ Hereditary descent is unquestionably the most frequent cause ; more than half the cases that occur are occasioned or favored by it. Marriages in the same family contribute, therefore, to the propagation of this germ. It often takes place uninterruptedly from the father to the son, from the son to the grandson : often with an interruption from the grandfather to the grandson ; often irregularly to the nephews, &c. The danger is less when the procreator does not become insane till after the procreation, and therefore had previously only a predisposition. The tendency manifests itself on the psychical side, — 1, by passiveness in thinking, in feel-

ing, and in *willing*; 2, on the physical side, by predominant erethistic vital debility, the fundamental character of the present generation."

Dr. Maudesley's observations<sup>12</sup> on this subject are important. He says: "The more exact and scrupulous the researches made, the more distinctly is displayed the influence of hereditary taint in the production of insanity. It is, unfortunately, impossible to get exact or accurate information on this subject. So strong is the foolish feeling of disgrace attaching to the occurrence of insanity in a family, that people, not apt usually to say what is not true, will disclaim or deny most earnestly the existence of any hereditary taint, when all the time the indications of it are most positive; yes, when its existence is well known, and they must know that it is well known. . . . Two important considerations, in regard to this question, should have full weight given to them: First, that the native infirmity or taint may be of very different degrees of intensity, so as, on the one hand, to conspire only with certain more or less powerful exciting causes, or, on the other hand, to give rise to insanity even amidst the most favorable external circumstances; Secondly, that not insanity only in the parents, but any form of nervous disease in them, — epilepsy, hysteria, and even neuralgia, — may predispose to insanity in the offspring, as, conversely, insanity in the parent may predispose to other kinds of nervous diseases in the offspring. . . . Infinitely various as the constitutional idiosyncrasies of men notably are, it is easy to perceive how impossible it is that statistics should ever give exact information concerning the causation of insanity: here, as in so many instances of their application, their value is that they settle distinctly the existence of a certain *tendency*, so to speak, which, once fixed, affords a good starting-point for further and more rigorous researches; they indicate the direction of future investigation."

The practical importance of this subject, in a popular point of view, consists in two facts: (1.) that there is a debatable ground of mental condition, which is not insanity in the eye of the law or of the physician, but which cannot possibly be spoken of as perfect mental soundness ; and (2.) that the various forms of slight and severe mental affection are naturally interchangeable and transformable by way of generation : thus hysteria or chorea, in one generation, may become imbecility, mania, or epilepsy in the next or third. Insanity of any form in the parent may be represented in the offspring either by a similar affection, by sensory disorders (as deaf-dumbness, &c.), by epilepsy, by hysteria, or by the vague and undefined weaknesses or perversions of judgment, capacity, or will, which we call *unsoundness of mind*. The general law with these neuroses is that, without special attention to the rules of hygiene, they increase in gravity and intensity from generation to generation ; and thus young persons who weakly encourage hysterical habits or the blind indulgence of impulses without the intervention of will and conscience, are laying the foundation for the most serious lesions of intellect or morals in after-generations. For not only are the special vices of organisation and function inherited in an aggravated form ; but it is sad, yet certain, that there are individuals who in their own person inherit the *sum* of the perverted tendencies of many anterior generations. M. Morel, speaking of such beings, uses the following forcible expressions :—

“A development sufficiently remarkable, of certain faculties, may give a different color to the future of these unfortunate heirs of evil ; but their intellectual existence is circumscribed within certain limits, which it cannot pass.

“The conditions of degeneration in which the heirs of

certain faulty organic dispositions find themselves revealed not only by exterior typical characters easily to be recognized, such as a small, ill-formed head, predominance of a morbid temperament, special deformities and anomalies, &c., but also by the *strangest and most incomprehensible aberrations in the exercise of the intellectual faculties, and of the moral sentiments.*"<sup>18</sup>

Our English law recognizes as *insane* those who do not know right from wrong ; and, considering their moral liberty as extinguished, views them as irresponsible. It recognizes as *sane* those who do know right from wrong, and views them as responsible, as enjoying moral liberty : a very imperfect and faulty conception. Many of those who are called insane could tell in forcible language the difference between moral right and wrong ; whilst many of those who mix daily in the affairs of men, and are considered sane, have no proper or practical conception of such differences. Now, if moral liberty means anything beyond a formula without interpretation, it means the power of choosing and acting, according to the dictates of judgment, conscience, and will, in opposition to impulse and temptation. The impulse and the temptation being increased, and the faculties of judgment and will, and the dictates of the conscience, being both relatively and absolutely diminished, it follows necessarily that, in proportion to these changes, moral liberty is invaded, its powers curtailed, and responsibility to some extent modified. These are precisely the variations which we observe occurring in obedience to the law of heritage, in its comprehensive sense : as in physical heritage all the qualities or lineaments of a parent are not equally inherited by the children, but divided amongst them, so in affections of the mind it is not always the same and entire phase which is represented in the offspring ; but this is analyzed, and the elements distributed.

In one we have an impulsive nature, in which, between the idea and the act, there is scarcely an interval ; in another, the proneness to yield to temptation of any kind, — a feeble power of resistance, inherited either from the *original or the acquired* nature of the parent ; in a third we have an imbecile judgment ; in a fourth, an enfeebled vacillating will ; in a fifth, or in all, a conscience by nature or habit torpid, and all but dormant. All these are the normal representatives of an unsound parentage ; and all are *potentially* the parents of an unsound progeny : in all is moral liberty weakened ; in all is responsibility not an absolute, but a relative idea.

"It is very singular," says Dr. Holmes, "that we recognize all the bodily defects that unfit a man for military service, and all the intellectual ones that limit his range of thought ; but always talk at him as though all his moral powers were perfect. . . . Some persons talk about the human will as if it stood on a high lookout, with plenty of light, and elbow-room reaching to the horizon. Doctors are constantly noticing how it is tied up and darkened by inferior organization, by disease, and all sorts of crowding interferences ; until they get to look upon Hottentots and Indians, — and a good many of their own race too, — as a kind of self-conscious blood-clocks, with very limited power of self-determination ; — and they find it as hard to hold a child accountable in any moral point of view for inherited bad temper, or tendency to drunkenness, as they would to blame him for inheriting gout or asthma."

The man who inherits from his parents an impulsive or easily tempted nature, and an inert will and judgment, and commits a crime under the influence of strong emotion, can no more be placed in the same category of responsibility with a man of more favorable constitution

and temperament, than can a man who steals a loaf under the pangs of starvation, with the merchant who commits a forgery to afford him the means of prolonging a guilty career. I do not hesitate to say that these constitutional defects may be (and *daily are*) so combined as to produce *almost* complete irresponsibility, under a rational system of judgment; even in cases where the intellect, *such as it is*, remains coherent, and its possessor is accounted sane. Hence arises, in great measure, that strange insoluble problem of our race,—the existence of what are called the “DANGEROUS CLASSES,” a people who seem set apart to fill our jails, our penitentiaries, our houses of correction, our penal settlements; a people at war with their kind,—natural enemies of their brethren; a leaven leavening, and infecting, and drawing into the vortex of its own corruption even the comparatively sound elements of society; the pariahs of humanity, the despair of philanthropists, the opprobrium of legislation. It will not be by constantly repeated corrections that these classes will be reformed,—“Why should ye be stricken any more? Ye will revolt more and more,”—but by a patient repetition of the means by which man, as a race, has been civilized. Successive generations, undergoing the process of elevation from barbarism, have been born not only into an improved and more favorable medium or condition of society, but also into an inheritance of faculties or aptitudes, intellectual and moral, refined and strengthened by the cultivation of those of their parents; and so it must be by successive attempts at the cultivation of the moral nature of these dangerous classes, that they, the barbarous elements of social life, must be redeemed from their present degraded condition, and enabled to transmit an improving and still improvable nature to their descendants. For a large amount of valuable information on

the direct and *constructive* inheritance of mental unsoundness, I would refer the reader to Dr. Campagne's recent work, "Sur la Manie Raisonnante" (Paris, 1869).

There is another form of weakness introduced into society through the medium of generation, important to notice, though not numerically so serious as the last. I quote from Mr. Whitehead, on "Hereditary Diseases":—

"The offspring of parents, both possessing great intellectual capacities, are liable to inherit such capacities in still greater proportion; but along with this refinement, so to speak, of the cerebral faculties, is usually conjoined a degree of physical delicacy, or of disproportionate development, which constantly endangers organic integrity; and the peril is further increased if education be urged, in early life, beyond a certain limit. The mind which seemed capable of comprehending intuitively the most abstract problem, is soon shaken and unbalanced, merging at length into insanity."

It is somewhat singular that amongst a people so barbarous<sup>14</sup> as the Chinese we should find, in reference to these hereditary weaknesses and crimes, a custom worthy of, but little followed in, the most civilized nations. In examining a criminal, they do not only inquire into the facts of the crime itself; they examine most minutely into the temperament, complexion, and physical state of the accused; into the most trifling events of his former life; into everything that can throw any light upon motive or impulse; also into the state of his parents and ancestors. Were this same rule systematically followed out in European courts of justice, we should very soon have a collection of the most valuable data for the solution of many hitherto insoluble problems, such as the general relations of organization to morality, of criminality to ignorance, education, insanity, and so forth. This excellent custom in the nation in question is accompanied,

however, by a barbarity of punishment which we should by no means wish to emulate. If a Chinese be convicted of lese-majesty, the law is, that "he be cut into ten thousand pieces, and his sons and his grandsons be put to death." It appears that a similar law exists in the code of Prussia, but only as to the *letter*, never being acted upon.

We have now to notice more especially those forms of degeneration in successive generations which arise in accordance with tolerably defined laws, from certain arrangements of society, certain habits of life of individuals, and certain occupations.

The first to which we allude is the subject of marriages between members of nearly allied families,—what are called consanguine marriages. The very general opinion is, that the children of such unions are affected with some form of physical or mental peculiarity, not possessed in the same degree or kind by either parent; but it is alleged by some that such ideas are chimerical, and, in fact, that, as the earth was first peopled by one family, there can be no valid reason why those even most closely allied should not intermarry. The question has been controverted warmly, and may be considered as not yet quite settled. Such illustration as can be derived from the breeding of animals is contained in the much-argued question as to the propriety of crossing, or what is termed *in-and-in* breeding; that is, breeding from near relatives. Mr. Youatt's verdict as to horses is as follows:—

"On the subject of *breeding in-and-in*, that is, persevering in the same breed, and selecting the best on either side, much has been said. The system of crossing requires much judgment and experience; a great deal more, indeed, than breeders usually possess. The bad qualities of the cross are too soon engrafted on the

original stock, and, *once engrafted, these are not for many generations eradicated.* The good ones of both are occasionally neutralized to a most mortifying degree. On the other hand, it is the fact, however some may deny it, that strict confinement to one breed, *however valuable or perfect*, produces gradual deterioration."

Sir J. Sebright, speaking of the in-and-in breeding, says, "I have no doubt that, by this practice being continued, animals would, in course of time, degenerate to such a degree as to become incapable of breeding at all"; and Mr. Knight adds, that "the animals in all cases gradually acquire, though with some irregularity, more dwarfish habits." It is worthy of remark that, under this system, the male constitution suffers first, and most. Mr. Walker observes: "The reproductive power is enfeebled; and upon that the whole organization of the animal depends. *Hence nearly perfect beings would inevitably degenerate.*" These views seem to be pretty generally received, and acted upon. It is true that, for the racecourse, the pure southeastern breed is adhered to; but different stocks of the same breed, and those brought up in different localities, are selected.<sup>15</sup>

There is this difference between the breeding of domestic animals and human propagation, that the former may be met with in a condition nearly approaching perfection, and so contain within any given family but few elements of degeneration; but it is otherwise with man, for it is rare to find any family that has not some taint of disease or weakness, moral or physical, from two members of which the progeny will be much more affected than either parent; for two individuals having the same defect will transmit it many times multiplied in intensity to their offspring. Burton says strongly, but not without truth:—

"By our too much facility in this kind, in giving way

for all to marry that will, too much liberty and indulgence in tolerating all sorts, there is a vast confusion of breed and diseases, no family secure, no man almost free from some grievous infirmity or other, when no choice is had, but still the eldest must marry . . . . or, if rich, be they fools or dizzards, lame or maimed, unable, intemperate, dissolute, exhaust through riot, as it is said, *jure hereditatis sapere jubentur*, they must be wise and able by inheritance ; it comes to pass that our generation is corrupt, we have many weak persons, both in body and mind, many feral diseases raging amongst us, crazed families, *parentes peremptores* ; our fathers bad, and we are like to be worse.\*

It will be necessary briefly to allude to the mode in which the parents respectively contribute to the formation and constitution of the offspring. Into the entire arguments for and against I cannot enter, but must content myself with giving those conclusions which seem most generally accepted, as accordant with the phenomena of horse and cattle breeding, and those observed in man. It appears that both the parents are represented in the offspring, and probably almost to the same extent ; all parts of the system are *modified* by each, yet each presides over a separate system of organs which follow respectively the type of one parent. Thus one parent may give the locomotive organs, which will include the general form and the muscular and osseous development ; whilst the other parent will give the vital or nutritive system, with the organs of the senses : the former will give volition ; the latter, sensation and the emotional faculties. Either parent may, according to circumstances, give either series of organs ; but if in one series there be traced a strong resemblance to one parent, the other series will almost certainly resemble those of the other.

\* Anatomy of Melancholy.

In animals of the *same* variety there is this uncertainty in a marked degree ; but in crossing two healthy breeds, it is stated to be the rule that the male parent gives the locomotive and volitional organs, whilst the female communicates the vital and emotional ones ; there is, therefore, much greater certainty of producing any desired modification of form or constitution, by crossing, than by "close" breeding.<sup>16</sup> By selecting males with that development of locomotive organs that may be wished for in the offspring from one breed, and females with the desired vital organs from another, we can calculate with tolerable certainty the character of the produce. But the case is different if we attempt the same with parents selected from the same family, though they may appear respectively to possess the same qualifications. We *may* succeed, but have no certainty. The young animal may, on the contrary, inherit the comparatively feeble locomotive organs of the mother, and the vital organs of the father. This latter contingency appears to become almost a certainty, if in-and-in breeding be long continued : the males lose their force, and the females give the locomotive and volitional organs. M. Devay says :—

"The crossing of races is of immense utility to the species ; the neglect of it is the cause of physical degradation in animals, and of organic and moral decay in man. Suppose a morbid germ in a family, and it is certain that this germ or diathesis will tend to develop itself more and more by consanguine marriage, in the progeny, the result of which will be extinction. For, as says Joseph de Maistre, every organic form bearing in itself a principle of destruction (*sic*), if two of these principles are united, they will produce a third form, incomparably worse ; for those powers which unite do not add only, — they multiply. This explains why aristocratic families are constantly becoming extinguished."<sup>17</sup>

It is not difficult to apply these principles to the question of consanguineous marriages. The parents are here of the same breed and family, and we may almost with certainty conclude that neither of them will be free from defect or weakness in some organ ; and being closely allied, the probability is that this organ will belong to the same series in one as in the other. In such a case as this the offspring cannot escape the taint : but supposing that in one the defect or weakness exists in the locomotive and volitional series, and in the other it exists in the vital or emotional organs, seeing that there is an uncertainty in these close alliances as to which parent gives each series, there is *a chance* that the infant *may* inherit the sound elements of each constitution ; but, as vice of formation has a strong tendency to transmission, there is a greater chance that one defect at least may be inherited ; there is also a possibility that, to the exclusion of the sound parts of the organization, the unsound elements of both parents may descend to the child. This gives a reasonable solution of the phenomenon of two sane parents, who are nearly allied, having an insane child. One parent may have weak volition, and the other weak sensation and emotion, and the child inherits both, having none of the counterbalancing properties of the parents separately. The very same parents, again, may have another child who will inherit and transmit to its posterity *all* the better qualities of mind and body possessed by the father and mother. M. Campagne, in the work alluded to above, refers to such facts as these, and classifies them as illustrations of the "Law of Natural Selection" ; a law which he considers to be the "*Mot d'Enigme*," as to the origin of mania in various forms, more especially the "*Manie Raisonnante*" in its varieties "*Orgueilleuse*" and "*Egoïste*." The conclusion from all which is this, that (theoretically)

marriages in the same family are more likely to propagate and intensify defects, and from such defects being probably of the same nature, less likely to eliminate them than unallied marriages. It cannot be said that by these latter we can *with entire certainty* correct deficiencies and weaknesses, but it is certain that, by proper selection of qualities, we have a more favorable prospect of doing so, since we are enabled to form a very probable conjecture as to what organs will be transmitted from each parent to the offspring. "For these reasons, belike," says Burton, "the Church and Commonwealth, human and divine laws, have conspired to avoid hereditary diseases, forbidding such marriages as are any whit allied; and so Mercatus adviseth all families to take such, *si fieri possit, quæ maxime distant naturâ*, and to make choice of those that are most differing in complexion to them, if they love their own and respect the common good."<sup>18</sup>

Meanwhile, observation goes strongly against the propriety of nearly allied marriages. M. Lucas having quoted the opinions of many breeders to the effect that *close* breeding, if long continued, succeeds very badly, and ends in the extinction of species, race, health, fecundity, and viability, thus proceeds: "History testifies to the same results amongst men; the aristocracies, reduced to repeated intermarriages, according to Niebuhr, are extinguished in the same manner, often passing through degeneration, imbecility, and dementia." Mr. Knight observes: "Amongst ancient families *quick* men are abundant, but a deep and clear reasoner is seldom seen. How well and how readily the aristocracy of England speak!—how weakly they reason!" There is abundance of historical evidence bearing on this point, yet it does not to every mind bear the same interpretation. Thus the Jews have been brought forward as a proof of the

correctness of both views, — viz. the propriety and the impropriety of allied and family marriages. Mr. Walker classes them as degraded, along with, and from the same causes as, the Hindoos and the Gypsies ; that is, close unions amongst members of one family. Dr. Steinau, on the other hand, upholds the entire family of Abraham as an instance of the propriety of such family connections : —

“ Abraham married his half-sister, Isaac the daughter of his first cousin, and Jacob his first cousin, furnishing three near marriages in succession, and yet they became the foundation of a stock which, if not gigantic, like the Anakim and their relatives of Gath, does not appear to have been deficient in any physical respect ; but, on the contrary, has continued to furnish to the present day numerous examples of various excellence . . . . and the practice of the Jews to the present day not only shows that the same views have been handed down to the latest posterity, but their average health, longevity, and intelligence, under every circumstance of climate and mode of life, and even in opposition to many adverse influences, are powerful evidences that the dread of intermarriage of relatives, on physical grounds, is as futile as that of many other superstitious fears.”

We can scarcely admit a “peculiar” and chosen people like the Jews to be a sufficient argument against phenomena so serious and so generally admitted. Moreover, as Dr. Devay observes, “the Jew offers *extenuating* circumstances in his consanguinity. Disseminated over the whole globe, — nomadic and commercial in habits, — they change almost imperceptibly, and are to each other, dwelling in north, south, or temperate zones, almost like different races. And, after all, amongst this people, we find in plenty the maladies ascribed to consanguine unions, and the Israelitish type has singularly lost its

force and beauty." Popular opinion and scientific induction equally lead to the impression that, although one marriage between near relatives may be unattended by evil consequences immediately perceptible, yet it is very rare that the second or third is so innocent. There usually arises amongst the children resulting from such unions a tendency to disorders, functional or organic, of the nervous system, or of the nutritive organs, tending in the former case to unsoundness of mind, and in the latter to conditions bordering on scrofula or some allied affection. M. Devay found in the children proceeding from 121 consanguine marriages, 22 cases of sterility (actual and virtual), 27 cases of various deformities, and 2 deaf-mutes. Dr. Boinet knew 5 idiots in 5 different families sprung from this sort of marriage. A celebrated lawyer, married to a cousin, lost 3 children from hydrocephalus. A manufacturer at Lyons, similarly married, had 14 children : 8 died of convulsions at an early age ; only one survived ; the remainder died of scrofulous affections. In my own circle of acquaintance I know several families where there is an idiot child, or where many of the members have the most strongly marked nervous peculiarities, to which the parents and ancestry were strangers, and for which there seemed to be no plausible reason, except that their parents were cousins, and that the families had been in the habit of intermarrying.

This subject of consanguine marriage appears to me of so much importance that I am induced to give some further illustrations. Dr. Bemiss, of Louisville, has collected the particulars of 34 consanguine marriages, from which result the following important details. Seven of these, or slightly more than one fifth, were unfruitful. From the 27 fruitful marriages, 192 children were born ; of these 58 perished in infancy or early life. Of the 134

who arrived at maturity, 46 appear to be healthy ; 32 are reported as "deteriorated," but without absolute disease ; 9 others are not reported upon as to physical condition. The remaining 47 are manifestly diseased : 23 are scrofulous, 4 are epileptic, 2 are insane, 2 are dumb, 4 are idiots, 2 are blind, 2 are deformed, 5 are albinos, 6 have defective vision, and one has chorea. If these numbers be compared with the proportions of those in the entire population suffering from the corresponding diseases, we shall observe a most striking preponderance here. To mention but one instance, that of epilepsy : this disease is calculated by M. Herpin, a distinguished French physician, to occur about six times in 1,000 of the population ; even this is considered by many to be too high an estimate ; yet in the case of these consanguine marriages we find 4 cases in 134 individuals. The statistics collected by Dr. Howe are still more decided. In his report on idiocy he mentions the details of 17 marriages of blood-relations, from which resulted 95 children. Of these, 44 were idiots, 12 scrofulous and puny, 1 deaf, 1 dwarf : only 37 of even tolerable health. From numerous instances under my own observation I select but one, that of a marriage between cousins belonging to a family that had intermarried more than once before. From this marriage resulted several children ; one was an utter idiot ; a second was nearly so, and had deformed hands ; a third was epileptic, and manifested depraved tendencies ; the others were, with one exception, of a low grade of intellectual development. The exceptional case was a female, who died not long after marriage ; her first and only child died of a convulsive disorder. These facts might be indefinitely multiplied, but they are sufficient for purposes of illustration ; and it cannot be doubted that they are of the gravest significance.

M. Boudin has recently been engaged in researches on this subject. He gathers from extensive statistics in France, that, whilst consanguine marriages are about 2 per cent of the whole number, the proportion of deaf and dumb children issuing from such marriages are nearly a quarter of the whole number. He finds that in various classes of the population the proportion of deaf-mutes increases in the ratio of the allowance of consanguine unions. Taking 10,000 Catholics, amongst whom these unions are not permitted, he finds the proportion of 3 deaf-mutes, whilst in an equal number of Protestants there were 6, and 27 in an equal number of Jews, where such marriages are more frequent. In one part of the United States also he compares the number of deaf-mutes amongst 10,000 of the white population, and an equal number of the slaves, where promiscuous marriages are frequent. In the former there is an average of less than  $2\frac{1}{2}$ , whilst in the latter there are 212. He finds that consanguine unions also favor in equal proportion the production of albinism, mental alienation, idiocy, and other infirmities.<sup>19</sup>

When will these things be believed?

Thus reason, theory, and observation combine to prove the impropriety of consanguine unions, and the advisability of a contrast of constitution or race in the parents. There is also what may be termed a *factitious consanguinity*, arising from identity or similarity of position, manners, customs, habits of life, occupation, &c., which institute necessarily the same constitution and temperament, and give proclivity to the same morbid affections. Marriages between persons so constituted are liable to be attended, though perhaps not to the same extent, by similar inconveniences to those amongst actual relatives. Lallemand remarks, that "nothing is more favorable to the improvement of populations than their crossing with

those who live in opposed conditions, because evil tendencies on each side neutralize each other in the offspring, and because each supplies what the other needs. It is thus that the most beautiful families of the south are those which proceed from Germans or Hollanders allied to women of the country." M. Devay also remarks, that those families of Berlin which are most remarkable for their beauty, their force, and their intelligence, proceed from French exiles married to young ladies of Berlin. Dr. Prichard remarks that, "in some parts of Ireland, where the Celtic population of that island is nearly unmixed, they are, in general, a people of short stature, small limbs and features; where they are mixed with English settlers, or with the Lowlanders of Scotland, the people are remarkable for fine figures, tall stature, and great physical energy."

Leaving this point, I pass on to notice the results of certain vicious habits in the parents upon their offspring; amongst which, standing out in bold relief, we notice intemperance, which we shall take as illustrating sufficiently the whole series of vices. We have already noticed the hereditary nature of drunkenness, and some of its morbid results; we have now to trace more especially some of the modifications caused in the physical and moral nature of the child, due to such habits in the parent.

The first point to be noticed is this, that the *habit* of the parent, when inherited, does not appear in the child *merely as a habit*, but in most cases as an irresistible impulse, a disease. This disease, known as oinomania, or dipsomania, is quite readily to be distinguished from ordinary intemperate habits; it is characterized by a recent writer in the *Psychological Journal* as "an impulsive desire for stimulant drinks, uncontrollable by any motives that can be addressed to the understanding or conscience,

in which self-interest, self-esteem, friendship, love, religion, are appealed to in vain ; in which the passion for drink is the master passion, and subdues to itself every other desire and faculty of the soul. . . . The victims of it are often the offspring of persons who have indulged in stimulants, or who have weakened the cerebrum by vicious habits or undue mental labor." The same writer gives, amongst other striking illustrations, the following : " In the case of a member of an artistic profession there is great natural talent and aptitude for business, so that he gives the highest satisfaction to his employers ; but at varying intervals of time — from a few weeks to several months — the oinomaniac is absent for several days from his office on a drunken 'spree.' When he returns, great is his remorse, bitter his self-condemnation, loud and resolutely expressed his promises to resist temptation. For a while all goes on well ; but, sooner or later, the temptation comes, the alcoholic stimulant is presented, is irresistible, and a paroxysm is the result, ending as before. Now, the brother of this impulsive oinomaniac is the victim of continuous drunkenness ; the father of both was a continuous drunkard, who believed himself to be a teapot, to be made of glass, &c., and who, in a paroxysm of inebriate fury, burnt a cat alive ; and the grandmother's brother was also an impulsive, and finally a continuous oinomaniac. It is related of this grand-uncle that, his friends having taken away his clothes on a Sunday morning, hoping to confine him to the house, he went into his warehouse, and donning a funeral cloak, made his way to the dram-shop. These cases illustrate the *hereditary* transmission of the predisposition from generation to generation."

Now glance at a sketch of a similar condition given by M. Morel, and then ask how far such an individual is a responsible being : —

" Such cases present themselves to our observation with the predominance of a phenomenon of the psychical order, which I have already had occasion to mention, — i. e. a *complete abolition of all the moral sentiments*. One might say that no distinction between good and evil remains in the minds of these degraded beings. They have desolated and ruined their families without experiencing the least regret ; in the acute state of their delirium they have nearly destroyed all that came in their way, and preserve no remembrance of it. The love of vagabondism seems to govern the acts of a great number of them. They quit their homes without troubling themselves where they may go ; they cannot explain the motives of their disorderly tendencies ; their existence is passed in the extremest apathy, the most absolute indifference, and volition seems to be replaced by a stupid automatism."

This, by its phenomena, its progress, and its termination, is clearly marked as a diseased condition, and under its influence infractions of social right and order are often committed, which are in the present state of our law punished as *crimes*, instead of being treated as diseases, and for which we should hold the unfortunate subject to be as irresponsible as any other maniac, and remove him from society, and from the means whereby to gratify his morbid propensities accordingly. For, what is really the state of the case ? This unhappy person is born with a strong tendency towards vice, inherited perhaps from his own parents ; perhaps, in still more confirmed cases, from a long line of vicious ancestry. *Theoretically* considered, this impulsive tendency may probably not be absolutely irresistible, but *practically* it is almost if not altogether so. For whilst the organism is so constituted as to receive vividly impressions of temptation, the force of the will and the power of resistance are indefinitely

diminished, so that moral liberty must be considered as in abeyance. This diminution of the power of the will is one of the most constant phenomena attendant both upon drinking and opium-eating.

"This," says a writer already quoted, "is a very important point in the history of oinomania, especially in relation to those forms which are clearly to be traced to hereditary transmission, either from insane parents or from those who have enfeebled their cerebrum by nervine stimulants. Indeed, this inferiority of the will is itself virtually a species of imbecility, not always, doubtless, accompanied by imbecility of intellect, but occasionally, on the contrary, associated with the highest powers of thought and imagination."

The two Coleridges, father and son, exemplify this point most strikingly ; the elder was an opium-eater, and writes of himself that, not only in reference to this sensual indulgence, but in all the relations of life, his will was utterly powerless. Hartley Coleridge inherited his father's necessity for stimulant (which in his case was alcoholic), and with it his weakness of volition. Even when young, his brother thus writes of him : "A certain infirmity of will had already shown itself. His sensibility was intense, and he had not wherewithal to control it. He could not open a letter without trembling. He shrank from mental pain ; he was beyond measure impatient of constraint. . . . He yielded, *as it were unconsciously*, to slight temptations, — slight in themselves, and slight to him, *as if swayed by a mechanical impulse apart from his own volition*. It looked like an organic defect, a congenital imperfection." He was well aware of his own weakness. In one of his books he wrote as follows :—

" Oh ! woful impotence of weak resolve,  
Recorded rashly to the writer's shame,

Days pass away, and time's large orbs revolve,  
And every day beholds me still the same,  
Till oft-neglected purpose loses aim,  
And hope becomes a flat unheeded lie."

These exalted types of mind contrasted with such weaknesses are not common ; but the weakness itself in its most aggravated form is so. Such men are not responsible, in the sense in which soundly organized men are. The elder Coleridge *knew* that he was not, and wished to be sent to an asylum to be cured of his propensities ; this was not effected, but he had a constant special attendant for the purpose. But there is no such resource as this for those in the lower walks of life, and of lower orders of intellect. Their temptations are more gross, and are not unfrequently indulged by means of theft or violence, and the perpetrators are treated as common malefactors. They are perhaps imprisoned ; and for the time this is salutary, because they *cannot* obtain drink : but they constantly relapse, and are constantly repunished ; and hence is ever recruited that hopeless and incorrigible body of our criminal population, the stock and capital of our police-courts. This system is manifestly unjust ; there *is* wilful crime in plenty in the world, but there *is* also disease of mind which resembles and re-enacts crime ; and to punish this disease is neither humane nor reasonable ; for punishment, far from curing, chiefly exacerbates it. For the continuance of it there are two principal reasons ; one of which is trivial enough, whilst the other contains practical difficulties of no ordinary character, and which may for some time to come prove insuperable. The first to which I allude is this, — there are enlightened men in all professions who recognize mental unsoundness as forming a very material element in human actions, but they are still in the minority. In courts of justice this plea is occasionally brought forward, in accordance with

the dictates of humanity and true philosophy ; but in the special case of which I am now speaking, the *name* is unfortunate. No sooner is it proved that the accused is laboring under the disease called dipsomania, than the opposed counsel makes the inevitable pun of "tipso-mania," and few juries are proof against so cogent an argument. It will be remembered that this occurred not long ago in one of our courts. The second reason is of a much more serious nature, it is one of distinction. It is feared that crime might go unpunished under the name of disease, and that so encouragement might be given to vicious propensities and actions. That this would be a difficulty in actual administration there is no doubt ; but if the position be true, should this consideration stand in the way of its due recognition ?

In France, a person accused of crime, but showing signs of such a disease, is submitted to the examination of a commission appointed for the purpose to decide whether he is in a responsible state of mind or otherwise. If he is considered responsible, the jury try the facts as in ordinary cases, and the judgment proceeds ; if not, the facts are still tried, but seclusion in an asylum is substituted for other punishment. It cannot be said that under this system criminals escape punishment, for it may fairly be questioned whether, to a man sane and merely vicious, the isolation in such an institution, and the inability therein involved to gratify his natural tastes and evil inclinations, is not a greater punishment than the treadmill or other labor would be.

The instincts of these oinomaniacs, and those suffering under an analogous affection, the erotomaniacs, seem to be as violent and as little under any control from the intellect or will, as those of a carnivorous animal when it smells or tastes blood ; or as the condition alluded to in these lines in reference to another appetite : —

Nonne vides ut tota tremor pertentet equorum  
Corpora, si tantam notas odor attulit auras?  
At neque eos jam fræna virum, neque verbera sæva,  
Non scopuli rupesque cavæ, atque objecta retardant.  
Flumina, correptos nudâ torquentia montes."

I am not now concerned to point out the precise mode of investigation ; I assert that there is a disease such as is described above, — a disease almost as well and characteristically marked, in its psychical aspect, as small-pox is in its physical ; that this disease is hereditary ; and that the victims of such sad heritage crowd our criminal assemblies. Let but this be once understood by our authorities, and it will not be long before means will be found to erect an equitable system of judgment upon it ; and amongst these means, the most efficient will be a reference to ancestry.

But it is not necessary that children should always inherit the actual alcoholic tendencies of their parents in order to present a type of progressive degradation. Some of them, many indeed, enter the world completely degenerate, in the condition of hopeless imbeciles or idiots. A forcible illustration of this point is found in Norway, where the spirit duty was removed in 1825. Between that time and 1835 the increase of insanity amounted to above 50 per cent on the previous proportion ! but the increase of *congenital idiocy* was 150 per cent. Out of three hundred idiots examined by Dr. Howe in the State of Massachusetts, 145 were the children of intemperate parents. In Sweden, 200,000,000 of *litres* (*say pints*) of some form of spirit are consumed annually. If, from the population of 3,000,000 we take an allowance of half for young children, some women, and those who from education and common sense restrain themselves within due bounds of temperance, we shall find 1,500,000 persons who each consume from 80 to 100 pints of spirit (*whiskey ?*) annually. Children of

eight, ten, or twelve years of age drink like their parents : the parents know no better way of quieting their infants than giving them linen soaked in whiskey to suck. Dr. Magnus Huss testifies, as a consequence of all this, that the whole people is degenerating ; that insanity, suicide, and crime are frightfully on the increase ; that new and aggravated diseases have invaded all classes of society ; that sterility and the premature death of children is much more common ; and that congenital imbecility and idiocy are in fearful proportion to the numbers born.

Other children born of intemperate parents *live intellectually* up to a certain age ; after which they either remain stationary, or gradually sink back into a state almost resembling idiocy. "After having painfully acquired some degree of information and fitness for occupation, they find themselves not only capable of no further progress, but they become successively incapable of fulfilling their functions" (Morel) ; and all this, it must be remembered, without any actual transgression of their own. The above-quoted writer gives many melancholy histories of these lamentable heritages, one or two of which I shall briefly quote. F—— was the son of an excellent workingman who had early given himself up to drinking. The son inherited the tendency, and to such an extent that "il profana dès la première nuit la couche nuptiale en s'y introduisant dans un complet état d'ivresse." He had seven children, of whose history the following is a summary. The first two died of convulsions. The third had attained some skill in handicraft, but fell away into a state of idiocy at twenty-two years of age. The fourth attained a certain amount of intelligence, which he could not exceed, and relapsed into profound melancholy with a tendency to suicide, which terminated in harmless imbecility. The fifth is of a peculiar and irritable character, and has broken all

relations with his family. The sixth was a daughter with the strongest hysterical tendencies; profoundly impressed with the sad spectacle of her family, she has been seriously troubled in her reason repeatedly. The seventh is a remarkably intelligent workman, but extremely nervous and depressed: he indulges in the most despairing anticipations with regard to his life and reason.

Innumerable are the forms in which this evil tendency acts upon the offspring. As has been before remarked, they need not inherit the identical habits or dispositions of the parents; but they inherit a faulty, defective, or vicious organization, which develops itself in the most varied forms of disease or character. It may, in one of the children only, manifest itself in a simple neuropathy, a hysterical tendency, an oddity or peculiarity of manner or of disposition; but *all these, when due to such an origin*, are capable of giving rise to affections of the mind of the gravest possible significance in the next generation.

The writer to whom we are indebted for many of the illustrations quoted on the subject of intemperance mentions the following case:—

“ A merchant is under our notice, affected with hopeless imbecility and general paralysis, for years before his mental disorder manifested symptoms of cerebral disease. One of these was, that after smoking a cigar he could not lift his eyelids so as to open his eyes, nor on some occasions could he articulate the word he would utter. He took alcoholic drinks in quantity far beyond the power of resistance of his brain, and fell a victim to their morbid action. Now this individual has a son and a daughter approaching adult life. The former has been subject from childhood, at varying intervals, to paroxysms of extreme terror and distress, arising from

no obvious or known cause, very similar to those which attack the oinomaniacs, but *as yet* (being but sixteen years of age) without the impulsive desire for stimulants. Previously to the attack there is great irritability and restlessness, with a tendency to sleep ; then the outbreak of inexplicable terror commences, usually in the night, continuing for two or three days. When it subsides, he is left weak, ill, and exhausted. The daughter, on the contrary, is passionately fond of every kind of pleasure, as dancing, society, &c. ; excels in artistic accomplishments, and is singularly vivacious and animated. Both these children have manifestly derived from their father a cerebral constitution which will endanger their well-being and happiness as years advance, by predisposing to the development of those insane impulses which we have discussed, or to various forms of melancholia."

I append an additional note from M. Morel :—

"I constantly find the sad victims of the alcoholic intoxication of their parents in their favorite resorts (*milieux de préférence*), the asylums for the insane, prisons, and houses of correction. I as constantly observe amongst them deviations from the normal type of humanity, manifesting themselves not only by arrests of development and anomalies of constitution, but also by those vicious dispositions of the intellectual order which seem to be deeply rooted in the organization of these unfortunates, and which are the unmistakable indices of their *double fecundation in respect of both physical and moral evil.*"<sup>20</sup>

Differences of social rank and condition exert a powerful influence upon these results : the children of the rich intemperate may be weak, nervous, excitable, and prone to morbid conditions of mind and body, yet they have advantages which those in lower life have not. They

have plentiful and healthful food, and under ordinary circumstances they have a well-regulated physical and mental education. The practice of their parents is not constantly enforced both by example and a sort of necessity; and the tendencies which they have inherited are not generally fostered by an entirely depraved moral medium. Far different is the lot of the children of the intemperate poor: born in the midst of abject poverty, misery and privation is their lot from their earliest infancy; and their want of the common necessities of life, with complete ignorance of its comforts, prompts them to the commission of crimes and to the indulgence of their hereditary tastes, to relieve their immediate wants and sufferings. And thus their impulsive nature, so far from being checked by any moral considerations, is placed in a very hot-bed for its evil development. Yet, different as is their station, in one particular they are alike,—the offspring of the confirmed drunkard, rich or poor, *will inherit either the original vice or some of its countless protean transformations*. The external aspect may in one case be less revolting and coarse than in the other, but none, as a rule, can escape the inevitable law, written in the most hidden recesses of our nature, in accordance with which the children do suffer for the sins of the parent, and even at the third and fourth generation the taint is hardly wiped away, save by the extinction of the line or family. For the disease which leads to these sad consequences there is but one cure,—total and entire restraint; so as to prevent for a long period any possibility of indulgence in the depraved tastes and habits: even this is too often unsuccessful. For a time, under this enforced discipline, a cure seems to be effected; but, when the subject of it is liberated, he too often takes unto him seven other devils, and the state of that man is worse than at the first. It would,

I think, be waste of time merely to point out the very obvious practical conclusions from the foregoing considerations ; and the duties which a due recognition of their truth entails both upon individuals and upon society at large.

I have entered thus at length into the subject of intoxication as affecting after-generations, intending it as a typical illustration of the mode in which all vices affect progressive human welfare : and because I believe that the use of intoxicating drinks, in what is *called* moderation, is a fearfully growing evil in our country. With regard to other vices, I must only briefly observe, that whatever has a tendency to lower the physical, intellectual, or moral tone of the parent has a tendency, *seldom lost*, to exert a disastrous influence over the future well-being of the child. Let the source of degeneration be what it may, the offspring will inherit a body or mind bearing traces of imperfect fitness or balance, which sooner or later will assert its presence and power.

In conclusion, I will briefly review the results of this inquiry.

1. In procreation, as in creation, we everywhere trace the operation of two principles, Similarity and Diversity.

2. In obedience to the law of similarity, "like produces like," equally in species, in races, and in families.

3. In obedience to the law of diversity, children differ from their parents and from each other. In accordance also with this law, there is the power of returning to the specific type, whatever may have been the modifications produced accidentally, or by the influence of circumstances, upon the race, even as, according to Mr. Darwin, the different varieties of pigeon evince a tendency to return to the "blue rock" type.

4. We have seen reason to conclude that these two

laws are not so much opposed as their names would appear to imply ; but that diversity is produced by the very potency of operation of the law of similarity, whereby temporary and accidental conditions are propagated.

5. Every formation of body, internal or external ; every deformity or deficiency, from disease or accident ; every habit and every aptitude, — all these are liable to be, or *may be*, transmitted to the offspring. In the case of accidental defects and modifications of the specific type, the offspring *usually* do not inherit them, but return to the normal type.

6. Intellectual endowments and aptitudes are liable to transmission ; and according to the mental cultivation or neglect of the parents will be (as a general rule) the capacity and facility of learning of the children. This will be more evident in proportion to the number of generations through which such cultivation or neglect has been practised.

7. All moral qualities are transmissible from parent to child, with this important addition, that, in the case of vicious tendencies or habits, the simple practice of the parent becomes the passion, the mania, the all but irresistible impulse of the child.

8. Even when the very identical vice is not inherited, a morbid organization is the result, which shows itself in some allied morbid tendency or some serious physical lesion.

9. All chronic diseases appear to be transmissible, either in the original form, or in the form of a transformation of the morbid tendency.

10. These inheritances, normal or abnormal, are not always immediate from the parents, or even in a direct line ; but they miss one or more generations, and sometimes have only appeared in collateral branches, as an

uncle or grand-uncle, &c. The reason for this may be deduced from what has been stated above. A man, for instance, does not inherit all the qualities of his father or mother ; and of those which he does inherit, only some are developed, whilst others remain latent, and are probably developed in a brother or sister. But his son may in turn inherit the same faculties, with this difference, that those which were but latent or potential in the father are fully manifested in him ; and so he comes to resemble not his own father (or mother) so much as his uncle or aunt, or some more distant relative, still descended from one common stock.

11. Of all morbid heritages, unsoundness of mind in its numerous forms seems to be the most certain and constant ; and the results form a considerable proportion of our criminal population.

12. But whilst by the law of Similarity children become subject to the imperfections of their parents, by the law of Diversity they are enabled to escape from them ; these evils are not *necessarily* entailed, and a proper comprehension of the principles upon which these diversities depend, enables us to take such measures as will facilitate this escape. And whilst on the one hand we see unhealthy children proceeding from healthy parents, on the other we see the morbid tendencies of the parents counteracting each other, and giving rise to a healthy offspring.

13. The offspring of that large portion of our populations who are given up to intemperance and other forms of vice inherit from their parents strong impulses and feeble wills, so as to become more or less irresponsible, and bear a peculiar relation to the law, — a relation which urgently claims an attention and investigation which it has as yet very imperfectly received.

14. It is highly improbable, and perhaps undesirable,

that matrimonial unions should ever be formed on the scientific principle which would lead to the fulfilment of the possibilities hinted at in the foregoing observations ; yet a due consideration of such principles may be serviceable in avoiding glaring and palpable evils, if not in producing the actual benefit which *might* accrue under other arrangements.

There are two branches of the subject which I have been compelled to pass over entirely without notice. The first is the influence of the maternal imagination over the formation and future character of the offspring, — a subject of very great interest and importance, but too extensive to be now entered upon. The second is the much agitated question as to the share which the parents respectively have in the formation of the physical and moral nature of the progeny. With regard to this we must content ourselves with saying, that we believe, notwithstanding all the investigations into this subject and all the books that have been written upon it, there are as yet no certain data whereby to decide the question, even if, from its nature, it admits of decision ; and that all that is known with even tolerable certainty is contained above in the observations with regard to crossing and consanguine unions.

Before dismissing this subject, it will be well to guard against one impression that may arise in the mind of the reader. It may appear that, in broadly and strongly asserting a special moral heritage, we thereby lessen man's individual responsibility ; for, it may be argued, if man be born with passions and impulses so strong, and, in many cases, with will so weak, how can he be blamed for the results ? To think thus would be a serious error, and one which I cannot too strongly disclaim. Man, the highest of animal creatures, is not indeed exempt from the physiological laws which govern the lower orders.

Differing as he does from these in the possession of a higher type of intelligence, in the capacity for forming and comprehending abstract ideas, and most of all in the presence of a moral nature and sense, he is yet amenable to the general organic laws by which all animal natures are governed. But there is this difference between the man and the brute, — both equally inherit the nature that is transmitted to them for good or for evil ; but in the one — the brute — the act follows immediately on the impulse, there is no reflection, no knowledge of good or evil ; therefore is the brute the predestined slave to his organization. In the other — Man — the impulse due to organization may be equally strong ; but judgment, and the still small voice of conscience, and his innate sense of right and wrong, constantly and surely intervene to keep him from evil, — constantly and surely, until deadened and blunted by continual disregard and habitual indulgence. And herein consists man's responsibility, and the very possibility of virtue, that whilst the brute acts strictly according to his organization, man, equally *urged* by his, *may* act according to a higher, — i. e. a moral law. Every sane man is responsible for his voluntary acts, whatever may be the moving impulse. Sin and crime are always sin and crime, whatever the constitutional tendency. In the face of the facts before us, I see no room to doubt or deny that one person is born with impulses and tendencies to particular forms of virtue or vice stronger than those of others, who, on the other hand, may be more prone to other forms of good or evil than the first. The passions and appetites are doubtless much keener and more difficult of control in those who inherit them from a line of ancestry who have never checked them, but in whom vice has been accounted a glory and a virtue. It is much easier for some who inherit a placid, even tem-

perament, with no strong emotions, to be outwardly virtuous and orderly, than for those just mentioned ; but *all have it in their power*. Habitual selfishness, disregard of the rights or feelings of others, immorality, may reduce man *nearly* to the level of the brute ; the vicious act may seem to be due to irresistible impulse, but the perpetrator is not the less culpable for that. He who wilfully intoxicates himself that he may commit a murder is still a murderer, and one of the deepest dye of crime. Life to all is a warfare, to some it is much more severe than to others ; but all *may* fight the good fight, and all *may* attain the reward ; none are born with a constitution *incapable* of virtue, though many have such a one as may well make life one long struggle against the power of temptations so severe that it is well for man that he is not alone in the mortal conflict.

## II.

### ON DEGENERATIONS IN MAN.

**PROBLEM:** *How are our armies of Crime and Disease recruited?*

In the preceding essay I have been concerned chiefly with those accidents which, I may almost venture to say, befall a man before his birth, — those influences which, years before even his embryonic life commenced, were at work to determine his future personal and moral endowments or aptitudes ; to determine whether his life should be one of calm apathetic endurance, or of fierce contest with, or ignoble yielding to, temptation, — perhaps to determine far more than this, which broadly to state might shock the prejudices or feelings of many. It has been indicated that each individual, as to his nature, is but the compendium and *résumé* of the nature and organization of his ancestry, — an equation, however, which from the multitude of the unknown quantities, and the inextricable complication of their functions, admits of no *certain* predictive solution in individual cases, though offering the most precise suggestions as to the total result.

But whilst the *tendencies* of man are thus determined, his *actuality* is by no means completed and unalterably fixed at birth. In the development of his organization and the growth of his character he is subjected to an infinite variety of influences, which have a powerful effect upon his ultimate constitution for good or evil. These influences are exercised under the forms of climate, soil,

social medium, state of civilization, education, food, habits of life, absorption of poisons, and a variety of *mixed causes* not easy to define in precise terms. Some of these are potent for good, others for evil. It is my object in the present paper to trace the effect of some of those agencies the result of which is to deteriorate the individual, and by their collective influences to form "Degenerate Classes" in society, the natural tendency of which is to terminate in the hospital, the prison, or the lunatic asylum.

Man came pure<sup>1</sup> from the hand of his Maker, but he has "sought out many inventions," most of them by no means particularly to his advantage. What was the special type of this perfect man we are not in a condition to ascertain. We, as good Englishmen, feel an instinctive, irresistible tendency to conceive of Adam as a very completely developed countryman of our own, as to *physique*. In the two celebrated French paintings of the "Temptation" and the "Fall," he is represented as a model Frenchman, even to the well-waxed and curled mustache. And if the African troubles himself about his first parent, his fancy doubtless paints him as with a skin still blacker and more sebaceous, lips still thicker, and hair more woolly, than his own.

The earliest representations of our species are far different from all these, and also from the Grecian type of perfection, yet probably not more so than they are from the real original man; so that, in speaking of "degeneration," we have no absolute standard of comparison. Yet the most cursory glance over the varieties of our race, whether in their ethnological or their social relations, shows that such degeneration has taken place, either absolutely or relatively: absolutely, in so far as the subject of it may be supposed to have fallen from a higher state of civilized development; relatively, as they have failed

to raise themselves to a certain standard. Ethnologically, the comparison would be between the refined and cultivated European, and what are called the "wild people" of Ceram, or "original people" of the Malay peninsula, who seem, objectively considered, to differ from the monkeys in little else than some unintelligible rudiments of articulate speech, and the casual accomplishment of kindling a fire. How have the differences been brought about? If we resort to the "diversity of race" theory, we only move the difficulty one short step backwards, for we are met by the consideration that, within credible historic periods, some barbarous nations have become civilized, whilst these have not; and also that, in some instances, people possessing a tolerably high grade of civilization have relapsed into almost complete barbarism, as we may see in certain Portuguese colonies.

But, considering man as one species, there are still two fundamental views of his nature and progress which it may be well briefly to notice. We, as believers in the possibility and the actuality of a revelation, see in the benighted, degraded condition of the heathen the result of the original curse operating through natural laws; by virtue of which, and in accordance with providential arrangements shrouded in the most impenetrable mystery, they are waiting, long waiting, for the bringing in of the fulness of the Gentiles. But there are those who recognize no revelation, nor even the possibility of such; and of these a certain class of writers affect to believe that those so-called "*original people*" are samples of men almost as originally created, in whom the only believable source of improvement — i. e. "*natural progress*" — has operated very slowly. We say *almost* as originally created, for by the theory he is supposed to have grown upon the earth without speech or knowledge of any kind, and has had emphatically to "work out" his own develop-

ment. The author of the "Defence of the Eclipse of Faith" gives a graphic and amusing picture of man as thus circumstanced :—

" We must fancy man feeling his way at once to the lowest elements of civilization and the most elementary conceptions of religion. And as savages make no rapid progress (*some* philosophers say they cannot, and all history shows they do not) without instruction from *without*, and as by the supposition primeval man could not have any, it is hard to say how many ages he crawled before he walked, lived on berries and acorns before his first incipient attempts at cooking, yelled his uncouth gibberish before he made (if he could ever make) the refined discovery of an articulate language, and lighted on his first deity in the shape of a bright pebble or an old fish-bone, and was in raptures at the discovery ! Or, rather, it is hard to say how the poor wretch ever survived the experiment of any such introduction to the world at all. Some philosophers have defined man as a laughing animal. I am afraid that on this theory it was some years before he found anything to laugh at. It must have been very long before his 'differentia' appeared."

Even had we no revelation, the hypothesis of a fall from a previous higher state, through the action of various climatic and moral agencies, would present infinitely fewer difficulties, in accounting for the phenomena, than this absurd theory. But as the whole subject of the production of varieties of mankind is much too extensive for present discussion, we propose limiting our attention to certain classes of morbid varieties, occurring in civilized societies, as true degenerations from the normal type, developed under the influence of climate, soil, habits, manners, occupation, use and abuse of stimulants, narcotic agents, &c.

The degenerations which are the subject of our obser-

vations consist, somatically, of imperfections in the development of bodily organs, deviations from the normal type and proportions, and feebleness in the performance of the functions ; psychically, they are manifested in infirmity of will and purpose, weakness of the moral sense, general tendency to impulse, and proclivity to temptation. Bodily and mentally, they are progressive in character, transmissible from generation to generation, and tend finally to the extinction of that branch of the race. It is from this unfortunate and numerous class that disease of all kinds selects its readiest and most inalienable victims ; that our "*dangerous classes*" are perpetually recruited ; that our prisons are filled ; that our lunatic asylums are peopled ; and, when all these deductions are made, there remains an almost countless multitude of "*detrimentals*," against whom the efforts of religious teaching, philanthropy, and legislation are directed well-nigh in vain ; — not, perhaps, utterly without intelligence, — not altogether *devoid* of a sort of moral *sensation*, — but in whom the two do not combine to form a rule for life and conduct.

In brief, the proposition is this : There are certain physical influences which (combined in many instances with absence of moral culture) produce deteriorating influences upon both the body and the mind of individuals, the results of which are progressive and transmissible, and terminate in the production of *varieties of mankind*, as distinct from the society amidst which they live both physically and morally, and, according to their specific source, as distinct from each other as are the Hottentot, the Malay, or the Esquimau from one another, or from the civilized European. The goitrous cretin, the perpetual worker in mines or even factories, the habitual and hereditary drunkard, the imbecile, the race of the opium-eater, — these and many others present types of degen-

eration from the *mens sana in corpore sano* almost as well marked and recognizable to the practised eye as is that of the poor half-starved Australian from his white brother. The process by which these variations are effected it is now purposed to trace.

Man alone is a cosmopolite ; he alone inhabits the entire earth. Where the bear and the reindeer can scarce exist ; where the lizard perishes, parched with thirst ; where the condor soars thousands of feet above the level of the sea ; and, hundreds of feet below the surface, where the rat hardly ekes out a precarious subsistence, there man finds a home and flourishes. But whilst he thus asserts his authority over Nature, she in turn sets her seal upon him ; and, according to the climate, the geological structure of the soil, and the ever-varying physical conditions with which he is surrounded, the primitive type becomes modified to produce the striking varieties in color, form, and general physical, psychical, and moral development, which have been so often mistaken for irrefragable evidence of distinct origin. These are what are termed the *natural* modifications of the human race.

But under exceptional conditions the contest of man with the various elemental influences is partially unsuccessful, and he becomes *unnaturally* or *morbidly* removed from the primitive type. The same result is brought about by various circumstances attendant upon his nutrition, his social condition, his habits of life, hereditary influence, and many other causes. This constitutes a "*degeneration*" which may be defined as a "*morbid deviation from a primitive type*," and characterized by a tendency to further deterioration, to hereditary transmission, and to the more or less speedy extinction of that section of the race or community. And as in the natural modifications of type there are certain forms occurring with *constant* relation to the causes in operation in their

production, so in the morbid deviations there are also certain forms, not occurring casually, irregularly, or interchangeably, but marked by definite characters, and bearing constant and definite relations to their causes.

It is not alone the fact that the nervous system, in its double connection with mind and body, is most frequently the victim of these degenerations, that lends a deep interest to this inquiry in reference to psychology ; but also that, according to M. Morel,<sup>2</sup> mental alienation in its various forms, but especially the chronic, is but the concentrated and final expression of degeneracy of race, wheresoever the chain of morbid phenomena commenced.

What, then, are we to understand by a " degeneration " of the human race ?

Man is not the product of accident, nor yet the last manifestation of imaginary transformations. Created to attain the end appointed by Infinite Wisdom, he cannot do so unless the conditions which insure the permanency and progress of the race be more powerful than those which tend to destroy and deteriorate it. That there are elements of deterioration and disintegration at work upon humanity and life in general is a very widely spread belief. Bichat says that such is the mode of existence of living creatures, that everything around them tends to destroy them. This is the expression of an antagonism between living and inert matter, which has formed the foundation for so many philosophical systems, some attributing all evils to unnatural social systems, others to the depravation of the moral sense, and others again to the original corruption of human nature. M. Morel (*op. cit.*) takes no exclusive view in favor of any opinion, but considers the truth to be found in a combination of all :—

" Placed in new conditions, the primitive man has experienced the consequences, and his descendants have been able to escape neither from the principle of heredi-

tary transmission, nor from the influence of those causes which, by affecting the health, tended to remove them still further from the primitive type. These deviations have produced varieties, of which the one part has constituted races capable of propagating themselves with a persistent special typical character ; whilst the other has introduced amongst the races themselves those abnormal conditions which are to form the subject of our investigations, and which I designate under the name of 'Degenerations.' These also have their distinctive characters and types, referable to the various causes producing them. One of the most essential characters of these degenerations is that of hereditary transmission, but under conditions much more grave than those attending ordinary heirdom. Observation shows that, failing certain exceptional elements of regeneration, the offspring of degenerate beings present types of *progressive degradation*. This progression may attain such limits that humanity is only preserved by the *very excess of the evil*, and the reason is plain : the existence of degenerate beings is necessarily bounded, and it is not even necessary that they should reach the *last degree* of degeneracy in order to be smitten by sterility, and become incapable of transmitting the type of their degradation."

Buffon says that three causes tend to produce changes in animal constitution,—climate, nourishment, and domesticity. Allied as man is *physically* to other organized beings, he must necessarily be submitted to the same influences under certain limitations ; but to attain just ideas, we must in his case substitute for domesticity the aggregate of manners, customs, education, civilization, and the like.

When animals are transported into a new climate, not only the individuals but the race require acclimatization. Nothing is more curious than the successive changes

produced in animals by domesticity and their return to savage life. Reduced to captivity, they not only lose many of their natural instincts and acquire new ones, but remarkable physiological transformations occur. M. Roulin relates in connection with the introduction of pigs into St. Domingo, that many of them escaped and became wild; and it is remarked that their ears have become straight again, their heads have become widened and elevated behind, and the color, instead of those varieties met with in the domesticated state, is almost uniformly black. The same has been observed in other countries, where the pig, returning to the wild state, has become in form, color, and texture of hair, like the wild boar. A very important fact, in its physiological and hereditary bearing, is noticed with regard to the lactation of cows. The constant practice of milking these creatures during many generations has caused the secretion of milk to become a constant function in the economy. In Colombia the abundance of cattle and sundry other circumstances have interrupted this habit of secretion; and in a very few generations the mammae have returned to the normal small size. Certain habits of progression are also hereditary, as the mode of walking of the Narraganset horse. In other cases, instincts are developed and become hereditary through habit, as in the dogs that are brought up to hunt the peccari. Their young ones know instinctively how to attack this ferocious brute, whilst the offspring of untrained dogs are devoured in an instant. Barking appears also to be an acquired but hereditary habit. Wild dogs do not bark, but howl. The young of domesticated dogs bark even when removed from their parents early; but dogs which become wild after being domesticated lose the habit of barking, and howl again. The same is observed in cats.<sup>8</sup>

Many other instances might be given, but these are

sufficient to illustrate the point in question, and to justify the deduction that man himself is not unamenable to the powerful influence of physical agencies, seeing that he is a being composed of the same materials, and constructed on the same principles, as those over which he has dominion. Doubtless in the constant strife with the elements to adapt them to his constitution, the latter is modified in some degree, and thereby adapted to the particular circumstances under which he is placed. This, within certain limits, cannot be considered morbid, nor a degeneration. In this strife the constitution may be modified just sufficiently to adapt it to surrounding nature, but an exaggeration of these causes may pass on to what becomes degeneration. It is not always easy to trace the line of demarcation, but certain instances are here given in illustration. There are amazing differences between the Esquimau who gorges himself with whale's blubber, and that "African starveling" who pursues the lion under a tropical sun; between the fisherman of the North, covered with seal-skin, and the hunter of the Sahara; between the luxurious Eastern and the energetic European. But these are all natural modifications to suit climate.

Passing on to another instance, we shall find an actual organic change occurring, obviously in accordance with the requirements of man in relation to the physical conditions in which he lives. Amongst the ancient Peruvians, the dominant race at the time of the Spanish conquest was that of the Incas, or Quichuas, who spoke a distinct language, and amongst whom appeared, almost exclusively, the civilization of South Africa. They had many noteworthy peculiarities of formation, but we are only concerned with one, viz. the great development of the chest and shoulders. The plateaux inhabited by this race are included between the limits of about 3,000

to 6,000 yards above the level of the sea. At this altitude the air is so much rarefied, that it is necessary to take a much greater volume of it into the chest in order to provide the system with a due amount of oxygen. In accordance with this necessity, the Quichuas had very large square shoulders, and an excessively voluminous chest, which is arched and very long, and so increases the size of the trunk greatly. In infancy, and during the whole period of growth, the chest is developed, comparatively irrespective of the growth of other parts. The lungs themselves are altered in texture, the air-cells are enlarged, and by various means the entire aerating surface increased. These statements are given on the authority of M. D'Orbigny. They afford an excellent example of the modifications which the human races may undergo under the influence of external circumstances,—changes which have for their result the effect of harmonizing the constitution of the inhabitants with the nature of the climate.

In some instances it would appear to be impossible to effect this harmony. Some climates are almost constantly fatal to Europeans, as that of Sierra Leone. Difference of original constitution can scarcely be alleged as the cause why these should perish where the natives exist naturally, for it is stated authoritatively that some descendants of the aborigines of this district, being taken back to the country which their ancestors had left long before, experienced the same inconveniences and diseases as the Europeans.

Intermediate between the two last-mentioned instances are those cases, so familiar to all of the present century, of the changes in constitution induced by emigration of Europeans to tropical climates generally, as to the East and West Indies. These changes are thus described by Dr. Buchez: "The general circulation is

excited to over-activity, the blood is diminished in quantity, and the arteries are less full. The circulation of the *vena porta* (supplying the liver) is augmented, and there is a very large secretion of bile. The liver becomes enormous, and appears to supplement the imperfect and insufficient action of the lungs. The muscular force is greatly diminished in energy." "Now," asks the writer, "is this climatic effect to be called a degeneration?" To which the answer of M. Morel is : "Certainly not ; but only a profound modification, transmissible by generation, which will terminate by being bounded by definite limits, and will have the result of adapting the constitution of the individuals to the climate in which they are called upon to live." In enunciating this opinion, M. Morel evinces certainly a very elastic faith in acclimatization. If his prophecy prove true, it must be under conditions with which we are not as yet familiar ; for the secret of *colonization* of a strictly tropical climate by Europeans has certainly not yet been discovered, in any full and perfect sense of the term. Above all things, Europeans can never personally cultivate the soil in such climates.

But the climatic influences which so modify the constitution may act to such an extent as to produce true *morbid* deviations from the normal type of humanity,—true degenerations, of which result we will now give an instance, though somewhat premature and out of place. It is taken from an account of the salt marshes of the Dombes, officially given by M. Melier. He says :—

"Visiting the village of Hiers, we saw children of twelve years of age who appeared but six or eight, so puny and undeveloped were they. Their dirty gray color is not only pale, but, as it were, tarnished. Meagre in limb and swelled in feature, they have only the abdomen developed, and almost all have incurable conges-

tions. For a long time the canton was unable to furnish the military contingent. The greater part of the young men were rejected, either for defect of stature or on account of general feebleness. It often happened that amongst those drawn not one was found fit for service. It has occurred also that in certain years not one remained of the prescribed class ; none had arrived at the age required ; *all were dead, for the most part in their infancy.* . . . . The aspect of this country, and of the race that inhabits it, carries deep sadness to the mind of the observer. It is a tomb, on the borders of which the inhabitants spend a weary existence, and seem daily to measure its depths. They are aged at thirty ; broken and decrepit at fifty."

It will not be inexpedient to compare and contrast with this true specimen of degeneration one of those other instances which have so frequently been cited by authors under the same category. We shall select but one, and that derived from those who have generally been considered as the lowest and most degraded specimens of our species. The Bosjesmans, a branch of the Hottentots, as reported by Professor Vater, live in a condition of profound misery, and the greater part of their tribes are as destitute of furniture as the cattle. Their subsistence depends partly upon the chase and partly upon the roots furnished by the desert ; upon the eggs of ants, the insects brought by the wind, and the reptiles that chance presents ; partly also upon the booty stolen from the oppressors of their race, their hereditary enemies, the colonists of the frontier. Fallen from the condition of shepherds to that of hunters and robbers, the Bosjesmans, as might be expected, and as is confirmed by those who have known them, have acquired more resolution of character in proportion as they have been exposed to more dangers, more ferocity

as they have suffered more injustice, and more activity as they have had to endure more privations. From being a shepherd people, of a mild, trusting, and inoffensive disposition, they have become gradually transformed into wandering hordes of fierce, restless, and vindictive savages. Treated by their fellowmen as brute beasts, they have ended by assuming their habits and customs.

But the intellectual inferiority due to a *morbid* deviation from the normal type of humanity is so distinct from that due to the causes just enumerated, that we are justified in adopting this conclusion, that between the intellectual state of the most savage Bosjesman and that of the most refined European there is much less difference than between the state of the said European and that of the *degenerate* being whose intellectual arrest is due to cerebral atrophy, congenital or acquired, or to any morbid influence leading to imbecility, idiocy, or dementia. The first, in effect, is susceptible of some radical improvement, and his descendants *may* ascend to a higher, or even *perhaps* the highest type. The second is only susceptible of *relative* amelioration ; and a fatal heritage will descend to his progeny. He must ever remain what he really is, — a specimen of degeneration in the race, — an example of *morbid deviation from the normal type of humanity*. (Morel.)

Passing from these general considerations, by which it will be manifest what is the technical and specific meaning of the term "degeneration," we find that there are numerous methods whereby analogous results are brought about ; these we shall notice in some detail.

1. We have seen that the man who lives in a marshy district undergoes a chronic poisonous influence, which destroys his health, and produces hereditary deterioration. But there are other circumstances where *degeneration* is in more direct relation with a lower tone of the

moral sense, violation of the laws of hygiene, and the results of habit and education. Such receive their illustration from the effects of the abuse of alcohol, opium, tobacco, and other narcotics.

2. Humanity seems periodically condemned to certain scourges, which entail fatal modifications in the laws of organisms. Such are famines and epidemics, which change so completely the general constitution, and engender so often those morbid temperaments of which we find the types in the generations which succeed to the actual sufferers by such events. Famines and epidemics do not appear to be isolated facts. They are generally preceded or accompanied by extraordinary perturbations in the regular progress of the seasons, and of natural phenomena in general. The idea of a special poisonous agency appears admissible in these cases, and that a something allied to marsh-poisoning may be closely connected with these strange occurrences.

3. Another most fruitful source of degeneration is to be found in the nature of the food consumed. Insufficient nourishment and the *exclusive* use of certain articles of diet, as maize or potatoes, produce morbid results of an endemic character, to be particularly referred to hereafter.

4. The effect of the social medium in which man is placed will furnish numerous and varied illustrations of our subject. This social condition imposes upon him a factitious mode of existence. The practice of dangerous or unhealthy occupations, and the habitation of crowded and unhealthy situations, subject the organism to new sources of decay, and consequent degeneration. The genius of man can do much in his contest with morbid influences, but his power is limited; and notwithstanding the progress of science, it is impossible that he should entirely escape injury from certain manufac-

tures, from constant contact with deleterious gases, and from passing the greater part of his time in heated atmospheres, or in the bowels of the earth. Add to these general conditions the profoundly demoralizing tendency of poverty, lack of instruction, failure of pre-  
vision, abuse of alcoholic liquors, and other forms of sensual indulgence and insufficiency of nutriment, and we may then form some idea of the complex influences which tend to modify the temperaments of the working classes.

5. There are degenerations which result from previous actual disease; others which are congenital, or acquired during infancy; others, again, which are in relation to deviations from the general moral law; others received from the ancestry by heritage; and, finally, others which are the result of a combination of many of these causes, where, to use M. Morel's expression, the degeneration is the result of a "double fecundation in a physical and moral sense." That part of our subject which related to inherited degeneration has in the previous essay been fully investigated. I would here repeat some conclusions there illustrated, which will aptly apply to all the forms just mentioned.

There exist certain individuals who resume in their own persons the morbid organic tendencies of many previous generations.

A development of certain faculties, sufficiently remarkable, may occasionally throw a more hopeful light upon the future of these individuals; but *their intellectual existence is circumscribed within certain limits which they cannot pass.*

The conditions of degeneration in which the inheritors of certain vicious organic tendencies are found, display themselves not only by exterior typical characteristics more or less easy to recognize, such as smallness

or unnatural formation of the head, predominance of a morbid temperament, special deformities, sterility, and anomalies in the structure of organs, but also by the most remarkable aberrations in the exercise of the intellectual and moral faculties and sentiments.

Asylums for the insane are, in this view, but a concentration of the principal forms of degeneration in the race. Because one is placed there as a maniac, an epileptic, an imbecile, or an idiot, he is not the less for that—in the majority of cases, if not all—the product of one or more of the causes here enumerated. We, as physicians, are better able than others to appreciate the influence of alcoholic excesses, of hereditary affections, of misery and privation, of insalubrious professions, of unhealthy localities. If, then, the causes of so much evil may yield before the efforts of the administrative authority, surely we are right to appeal to it. We must not remain inactive contemplators of so many destructive agencies. Medicine alone can sufficiently appreciate the causes producing degeneracy of race; to it alone, therefore, it belongs to point out the positive indication of the remedies to be employed.

Mental aberration, serious as it is in my point of view, in this light becomes doubly so when it is not merely an individual lesion, but the fatal climax, and, as it were, the *résumé* of a long line of individual and hereditary affections. It is easy to conceive how, from one generation to another, the moral and physical condition is gradually deteriorated, when what was the habit merely of one generation became an instinct and impulse in the next; when added to the hereditary taint was the force of example positively, and negatively the absence of all instruction and useful education; when to the disease of mind already existing, either actually or potentially, was systematically denied the exercise of the

commonest rules of hygiene or therapeutics, and the ordinary restraints of morals and religion. In cases representing so deplorable an ancestry as this, medicine will do little in altering the condition of the individual, which may be considered virtually unmodifiable ; but there remains an important part to play in the enunciation of principles which, when carried out, will tend to the removal of those causes to which so many of these evils are attributable. It is true, as already seen, that degeneration tends ultimately to the extinction of the degenerate race ; but this is not enough. The death of the branches of a tree is not sufficient to regenerate it when its roots are fixed in a permanently unhealthy soil. Whether the human race as a whole is in a state of degeneration or not, is not the question ; perhaps, were it so, it might be an insoluble one. But it is clearly proved, or provable, that a great number of special degenerations are in progress in the species, and that these are in certain proportion to well-defined causes. These causes are in some degree removable : in other respects, owing to the constitution of society, they admit only of more or less modification. Be this as it may, the first step in the process is to *point out the source* of these evils, and the mode in which they first act upon individuals, and, through them, upon society at large.

After these general considerations, I propose now to investigate in detail some of these causes of degeneration, with their *modus operandi* ; and select, as the first illustration, the abuse of alcoholic liquors, as being not only most important in its bearing upon our own nation, but as offering a *résumé* of almost all other forms of degeneration, at one or another period of its history. The disastrous train of results from the inordinate use of alcohol in its various forms has been of late years known by the name "chronic alcoholism." Entering the system

in large quantities, it modifies fatally the constituent elements of the blood, and acts as a poison. The first effect of large doses of alcohol, taken as a beverage, is found in the train of symptoms known as drunkenness. Its phenomena are, unfortunately, too familiar to need description, but the order of their succession is worthy of brief notice. There is first a period of increased activity of the muscular powers, with a more than usually rapid flow of ideas; then succeeds, invariably, a condition characterized by alternate excitement and depression, both of the mental and physical order; finally occurs the third phase, stupor, relaxation of the muscular system, and deep, comatose sleep. These symptoms are transitory; but by and by, continuing the history of a person addicted to this vice, true delirium occurs, of a more formed and persistent character, still of an acute and active nature. This, which is known popularly, as well as professionally, by the name of delirium tremens, is characterized by a train of phenomena upon which we will not dwell, with one exception. It is worthy of notice that the hallucinations so constantly attendant upon this disease have all a fixed and determinate character. It seems to the patient that he is surrounded by animals, frequently creeping creatures, of all sizes, and he stretches out his hand to grasp them. A constant psychological or sensory effect, following a given physical cause, is always of great interest. This is the more so, because the idea of "creeping" or undulation of forms of light, more or less embodied, occurs almost constantly under the influence of some other narcotic or intoxicant agents, more particularly chloroform, Indian hemp, and belladonna. It may be, that by a happy induction from a large collection of well-observed facts of this order, some light may ultimately be thrown upon that most mysterious subject, the mechanism of cerebration.

But neither intoxication nor delirium tremens constitutes what we imply when we speak of alcoholic poisoning. There is a singular correspondence in the order of the symptoms ; but whilst intoxication lasts a few hours, and delirium tremens a few days, or perhaps weeks, the true chronic alcoholism spreads its baneful influence over years, if the constitution be originally strong enough to last out its effects so long. The consequences, also, are proportionately more serious ; it may, indeed, admit of some doubt, whether a person once under the influence of alcoholic poisoning, as we are now using the term, is ever able to rise entirely superior to its effects. Not only is the physical strength undermined to a terrible extent, but, through the exhausted nervous system, the will is broken, and powerless to cease from the fatal habit which has determined the change. The special signs of this affection are trembling of the hands and feet, diminution of strength, paralysis, partial or general, starting of the tendons, cramps, and painful spasms. At a more advanced period, convulsions and epileptic attacks occur. In the sensitive sphere of the nervous system, we notice at the outset itchings and prickings, being exaggerations of the general sensibility, and neuralgic pains. Later still appears a diminution of the sensibility, difficulty of speech, and general disorder of the special senses. Not to dwell upon details, which would only be appropriate in a strictly medical essay, I may say that the victims of alcoholic poisoning are enfeebled, both as to body and mind, to the very extreme, and that the moral sentiments are perverted in equal proportion. Death ensues in a few months or years, in a state of indescribable misery and suffering.

All this, fearful as it is, would be comparatively of trifling importance, did the punishment descend only on the individual concerned, and terminate there. Unfortu-

nately this is not so, for there is no phase of humanity in which hereditary influence is so marked and characteristic as in this. The children unquestionably do suffer for or from the sins of the parent, even unto untold generations. And thus the evil spreads from the individual to the family, from family to community and to the population at large, which is endangered in its highest interests by the presence and contact of a "*morbid variety*" in its midst.

The history of four generations of a family sketched by M. Morel is full of instruction : it includes father, son, grandson, and great-grandson.

*1st Generation.* — The father was an habitual drunkard, and was killed in a public-house brawl.

*2d Generation.* — The son inherited his father's habits, which gave rise to attacks of mania, terminating in paralysis and death.

*3d Generation.* — The grandson was strictly sober, but was full of hypochondriacal and imaginary fears of persecutions, &c., and had homicidal tendencies.

*4th Generation.* — The fourth in descent had very limited intelligence, and had an attack of madness when sixteen years old, terminating in stupidity nearly amounting to idiocy. With him probably the race becomes extinct. And thus we perceive the persistence of the taint, in the fact that a generation of absolute temperance will not avert the fatal issue.

But the effect of alcoholic intoxication on the immediate offspring as individuals has been so fully discussed in the previous essay, that I have only here to trace its results upon communities and nations.

When in a society, a people, or a race, we find that the moral and intellectual powers have undergone considerable degradation, — that maladies, up to a certain time unknown, now have a serious influence on the public

health ; that the number of insane persons and criminals increases in great proportion, — we have a right to conclude that a cause which, in individuals and families, produces certain results, is likely, if in operation, to have done the same in larger communities.

The illustrations of this principle are chiefly taken from Sweden, concerning which country in this relation, thanks to Dr. Magnus Huss, we know more than any other nation. The abuse of alcohol seems to have begun here during the last century. Of this we have the proofs in the efforts made both by physicians and legislators to enlighten the people, and to induce them to pause in their ruinous career. So early as 1785, Dr. Hagström, struck with the growing evil, made an energetic appeal to his fellow-citizens to check a vice which was not only an outrage to religion and morals, but which seriously threatened future generations. Since this time innumerable voices have been raised to the same end, but, notwithstanding all this, the evil has increased to such an extent that Dr. Magnus Huss does not hesitate to say : —

“ Things are come to such a point, that if some energetic means are not adopted against so fatal a custom, the Swedish nation is menaced with incalculable evil. The danger is not future and contingent, it is a *present* evil, the ravages of which may be studied in the present generation. No measures can be too strong ; it is better to save at any price than have to say, ‘ It is too late.’ ”<sup>4</sup>

Without entering into all the detailed statistics given in support of the gravity of these views, we may find sufficient ground for them in this one startling fact, given on the same authority as that just cited, — that there are one million and a half of persons, being about one half the Swedish population, who consume annually from 80 to 100 litres (140 to 175 pints) of brandy or

other spirit each person ! What wonder, then, that the writer should consider the country threatened with irre- mediable destruction if immediate steps are not taken to arrest and counteract the evil. He also alleges positively that the Swedes, as a nation, have already deteriorated both in stature and physical strength.

But this is not all ; there are other facts which appear to be in direct and unmistakable relation to this practice. New diseases have appeared amongst the people, and the old ones have increased fearfully, both in numbers and intensity. The one new disease chiefly insisted upon is an epidemic *chronic gastritis*, which in isolated cases is easily producible by alcoholic abuse in our own country. Scrofulous affections, and others indicating great deterioration in the blood, attack all classes, rich and poor, dwellers in town and dwellers in country. Heritage also plays its part, as is customary where evil influences are at work, and children of twelve, ten, or eight years evince the fatal predilection. The average duration of life in those parts of the country where the evil is most rife is much shortened : of this one instance may be adduced. In some districts where very little alcohol is consumed, as in Jamtland, the mortality is but 1 in 80 annually. In the entire district of Erkistuna the mortality is 2 per cent ; but in the city of that name, where drinking is practised to an enormous extent, the mortality is 3 per cent. Mental disorders are becoming fearfully rife, and suicide occurs so frequently as to be hardly credible. In ten years the average of suicides between twenty and fifty years of age was 1 in 57 deaths ; "But if," says Dr. Huss, "we reckon as suicides those who have died of the *immediate* effects of alcohol, in a state of intoxication, the proportion will rise to 1 in 30 deaths."

Crime also seems to be greatly on the increase. In the year 1830 the proportion of criminals convicted of

various offences was to the entire population as 1 to 143 ; in 1845 the ratio was 1 in 100. This relation of intoxication to crime is everywhere observed. In our own country Mr. Thompson, of Banchory, in his excellent work on "Punishment and Prevention," as regards crime, attributes two thirds at least of all crime and pauperism to drinking.

"There is," says he, "a unanimous opinion of the fact,—expressed in various forms by all, without exception, who have the means of knowing,—that drink is the great cause of crime ; that but for drink there would be little crime, or, as it has lately been admirably expressed by Mr. Recorder Hill, 'The beer-house and the gin-shop are the authorized temptations offered by the Legislature to crime.' Careful inquiries also lead to the conclusion that drink is as much the cause of pauperism as of crime, generally in the person of the pauper himself ; but if not, then in the habits of his immediate ancestors."

As may naturally be supposed, the effects in other countries are of similar nature. In England our asylums, our hospitals, our workhouses, and our prisons abound with the most terrible illustrations of the views just quoted. In the United States, it is alleged by Michel Chevalier, that, even at the beginning of the present century, when the abuse of alcoholic liquors was not nearly so great as at present, between 40,000 and 50,000 persons died annually from its effects. It can scarcely be denied that in some cold climates, and under certain conditions of nutrition, alcohol, in some form or proportion, may be advisable, or even necessary, as an article of diet ; but it has been justly observed by Quetelet : "*Quand un climat crée un besoin, il est bien difficile que l'homme n'en fasse pas un abus.*"

Dr. Maudesley has a passage in his recent very valu-

able work,<sup>6</sup> so closely bearing upon this subject that I cannot refrain from quoting it: "The causes of the defective cerebral development which is the physical condition of idiocy are often traceable to parents. Frequent intermarriage in families may undoubtedly lead to a degeneration which manifests itself in individuals by deaf-mutism, albinism, and idiocy. Parental intemperance and excess, according to Dr. Howe, hold high places as causes of convulsions and imbecility in children. Out of 300 idiots in the State of Massachusetts, whose histories were carefully investigated, as many as 145 were the offspring of intemperate parents. Here, as elsewhere in nature, like produces like; and the parent who makes himself a temporary lunatic or idiot by his degrading vice, propagates his kind in procreation, and entails on his children the curse of the most hopeless fate."<sup>6</sup>

Alcohol is the chief intoxicant of European nations, but it may be stated, as a general rule, that wherever man is found there may be found something intoxicating to correspond, whether it be drunk, chewed, smoked, or snuffed. The inhabitants of Polynesia find their highest enjoyment in making themselves drunk with a fermented liquid, prepared from a kind of pepper (*Piper inebrians vel methysticum*). The Kamschatkans and other tribes use for similar purposes, in various ways, the *Agaricus muscarius*, smoked, swallowed, and taken as snuff. In like manner the Ottomans use *niopo*; the Chinese, and the Eastern nations generally, use the betel-nut, the *kaad*, the nuts of *kola* and *coca*, all for one and the same purpose of intoxication or stupefaction; but the narcotics with whose use and abuse we are the most familiar are hachisch, opium, and tobacco.

The Indian hemp (*Cannabis Indica*) forms the basis of most of the intoxicating preparations used in Egypt, Syria, and most Oriental countries. The leaves are

smoked alone, or mixed with tobacco, and the fatty extract, known as *hachisch*, is eaten alone, or combined with opium or other narcotics. As to its specific effects on individuals and the race, I will not consider these separately, but include them with opium, which I shall now examine, as has been done with alcohol, as to its effects on the individual, the family, and the community at large.

The first effect of taking a moderate quantity of opium for purposes of stimulation is a feeling of satisfaction or content, and slight excitement, accompanied by loquacity and involuntary laughter. The eyes are brilliant, and the respiration and circulation are quickened and excited. The expressions are lively, and the imagination wanders off into strange illusions. Now and again it may be observed that facts and ideas long forgotten present themselves to the mind in all their original freshness. The future appears all bright, and all the happiness ever wished for appears realized. These effects are followed by corresponding depression ; there is a diminution of muscular power, and of susceptibility to the impression of external objects ; there is a desire for sleep.\* The effect is very similar when smoked, but more rapid. As to the disastrous effects of habitual eating or smoking of opium in excess, Dr. Oppenheim writes :—

“The habitual opium-eater is instantly recognized by his appearance. A total attenuation of body, a withered, yellow countenance, and lame gait, a bending of the spine, frequently to such an extent as to assume a circular form, and glossy, deep-sunken eyes, betray him at the first glance. The digestive organs are in the highest degree disturbed, the sufferer eats scarcely anything,—his mental and bodily powers are destroyed. . . . These

\* See Pereira's “*Materia Medica*,” *sub voce*.

people seldom attain the age of forty, if they have begun to use opium at an early age. . . . When this baneful habit has become confirmed, it is almost impossible to break it off; the torments of the opium-eater, when deprived of this stimulant, are as dreadful as his bliss is complete when he has taken it: to him night brings the torments of hell; day, the bliss of paradise."

Some writers say that scarcely any smoker of opium can restrain himself within the bounds of moderation. The Abbé Huc is of this opinion, and says that "*nothing* can cure a confirmed smoker. Almost all rapidly attain a fatal termination, having passed, in quick succession, the stages of idleness, debauch, misery, the ruin of their physical strength, and the utter depravation of their moral and intellectual faculties." M. Morel considers that the action of opium is more pernicious than that of alcohol in many particulars, especially in the rapidity with which the disorders of the nervous system declare themselves. "Given the period," he says, "at which a person begins to smoke opium, it is easy to predict the time of his death; his days are numbered. The physiological effects are uniform, and succeed each other with an unvarying regularity." The same authority adds, that *no smoker of opium attains an advanced age*, and that their offspring are blanched, miserable, and struck with premature decay. The terminal scenes of the life of an opium drunkard are sufficiently similar to those of one poisoned by alcohol, to allow the description already given of the latter to stand for both.

It is not necessary to enter into any elaborate argument to show that the practice which exerts so powerful an influence for evil over individuals and families will be attended with degeneration in the community, in proportion to the extent of the evil. As alcohol to Northern

Europe, so is opium to China. The frightful increase in this nation of the habit of smoking opium may be indicated by statistics. In 1810 there were sent to Canton 2,500 cases of opium; in 1820, 4,770 cases; in 1830, 18,760 cases; and in 1838, no less than 48,000 cases. And this notwithstanding all the laws enacted against it,—laws which the lawgivers were the first to infringe and set at naught.

"At no period of time," says M. Morel, "has humanity witnessed a fact like that we have now to consider. Three hundred millions of individuals, united under one absolute government, speaking the same language, and having identical religious notions, present to us the sad spectacle of a people menaced, as to its dearest interests, by the most fatal and degrading habit it is possible to conceive,—that of smoking opium."

That a habit which produces such results as we have described must produce baneful effects upon the society in which it exists, cannot be doubted. And yet we have great difficulty in arriving at definite data concerning this point. If we hear the other side of the question, we shall be told that the consumption of opium is not so generally practised as has been stated, and that even its habitual use is not always immoderate, nor attended with the evil consequences to the health of the consumers that might be expected. Drs. Pereira and Christison both hold to the opinion that the evils attendant on a moderate (even though habitual) use of opium have been very much exaggerated. The former writer, quoting the words of an intelligent, unbiased professional observer, concludes that—

"Although the practice is most destructive to those who live in poverty and distress, and who carry it to excess, yet it does not appear that the Chinese in easy circumstances, and who have the comforts of life about

them, are materially affected, in respect to longevity, by the private addiction to this vice. There are many persons within my own observation who have attained the age of sixty, seventy, or more ; and who are well known as habitual opium-smokers for more than thirty years past." (*Op. cit.*, p. 2013.)

Another testimony to the same effect, from Dr. Eatwell, a well-known writer, I insert amongst the notes after this paper.<sup>7</sup>

Some authorities allege that there is good ground for supposing that the amount of opium-smoking in China has been exaggerated, in the fact that tobacco is smoked to an enormous extent there, as it is well known that the smoker of opium finds no pleasure in tobacco. The Abbé Huc says that the use of tobacco has become universal in the empire. "Men, women, and children, all smoke, and almost without cessation. Whatever the employment, smoke accompanies it. If they pause in eating, it is to smoke ; if they awake at night, it is to light a pipe." But, even admitting the wide prevalence of the use and abuse of opium, we can with great difficulty attach this vice to any proofs of degeneration amongst the people. The degenerative element is there, and the vice is there ; but although we may hypothecate the causal connection, we cannot prove it. The data are not accessible ; our knowledge of facts, past and present, is limited. In our former investigations, also, we judged of the degeneration of the people in part by the excess of crime, and the great frequency of suicide, but we cannot with propriety apply that test to Oriental people ; we cannot consider their statistics as equally significant with the records of crime in Western nations, seeing that many of those acts which with us are referable to crime or mental alienation are, amongst the Orientals, to be considered as attached to mistaken notions

of morals and religion, or as originating in peculiar legislative enactments. To take, as an instance, suicide : it is certain that this crime is exceedingly frequent in China, yet it must not be considered as indicative of the same amount of mental alienation in society which an equal average amongst ourselves would show. The Abbé Huc writes :\* —

" It is almost impossible to imagine the readiness with which the Chinese commit suicide. It requires only the merest trifle or a word to induce him to hang or drown himself, — these being the two kinds of suicide most in favor. In other countries, when a man wishes to revenge himself on his enemy, he tries to kill him ; in China he kills himself. There are various reasons for this. In the first place, the Chinese government holds the person responsible for the crime of suicide who gave the offence causing it. It follows from this, that if any one wishes to avenge himself on his enemy, he has but to kill himself to work him the direst woe. He falls into the hands of the executive, who at least torture and ruin him, if not take his life. The family also of the suicide generally obtains large pecuniary compensation ; and it is not rare to see wretched beings, who are devoted to their family, go and deliberately commit suicide at the house of some rich person. On the other hand, if any one kills his enemy, he thereby exposes himself, his friends, and his family to ruin and dishonor, and deprives himself of the rites of burial, — a capital point with the Chinese. Again, public opinion, instead of blaming, glorifies and honors the suicide ; and lastly, it appears that the process of judgment is so terrible in many instances in China, that the criminal fears it more than death."

In like manner, consulting still the same authority,

\* "The Chinese Empire," Vol. I. p. 309.

the great frequency of infanticide attaches itself rather to mistaken views of demon-worship than to any actual criminal propensity. It is thus evident how differently the statistics of crime must be interpreted in reference to the nations of the East. But we may conclude, that as there does appear to exist among the people a tendency towards deterioration, in their moral, physical, and intellectual condition ; and as the abuse of poisonous agents, such as opium, exercises so powerful an influence for evil upon individuals and families,—on the principles already set forth it is rational to conclude that the effect on the race will be analogous. “ Were it otherwise,” says M. Morel, “ the degenerative effect of alcoholism, hereditarily considered, might be open to doubt ; but this has been proved by facts much too serious and weighty to be doubted ; and we cannot but recognize the striking analogies between the consequences of alcoholic poisoning and that from other narcotics. It is greatly to be feared that we shall, at no distant date, have more ample means for deciding the question as to the influence of opium for good or evil, by investigations in our own country. It is strongly suspected by those who have the best means of knowing, that its consumption for sensual gratification is vastly on the increase amongst our own population. I will only quote one statistical fact in reference to this part of the question. In the year 1830 there were one hundred and four thousand pounds of opium received in London, and in 1852 two hundred and fifty thousand !

Meanwhile, we have our own special narcotic, which doubtless has its part to play in producing the various degenerations that are claiming our attention, — tobacco. M. Morel, like many others, speaks doubtfully, or rather guardedly, on this matter. He thus introduces the subject : —

“ What may be the part which tobacco plays in the

production of degeneration? And admitting even that its degenerative action is an ascertained fact, how far would it be good medical hygiene to attack the usage of tobacco, which has become for all nations not only a habit, but an imperious necessity, to be satisfied at any risk? . . . . I have no intention of attacking its use, and that for many reasons: first, it is far from being proved that smoking, *in moderation*, is in any way injurious; and, secondly, it would not be without danger to invoke the force of an absolute legislation against a habit passed into such an irresistible necessity."

Whatever may be the state of the case as to the *use* of tobacco, there can be but little difference of opinion as to its *abuse*. A large proportion of men will have either tobacco or opium; and of the two evils, the former is preferable, as less hurtful in general, and more readily, though still with difficulty, kept in control. But when inordinately used, the consequences are, in their way, as serious as those of either alcohol or opium. The first attempts at smoking usually produce nausea and vomiting, but the economy soon habituates itself to the practice. It is certainly injurious to very young people, before development is completed. The great quantity of saliva secreted is likely to interfere greatly with the integrity of the digestive functions. Young smokers are generally pale and meagre, and their nutrition imperfect. There is alternate excitement and depression of the nervous system. The smoker also *generally* takes alcoholic liquors to some considerable amount, and passes a great part of his time in a vitiated atmosphere. If we add to this the well-known fact, that the essential principle of tobacco is one of our most virulent poisons, we shall have probably made out a reasonable *a priori* case against tobacco. But facts do not always accord with foregone conclusions, and the

question must remain one for decision by experience. If we appeal to testimony, it is so varied that we can extract very little that is reliable from it. In an animated correspondence which appeared in the *Lancet* in the year 1857, on this subject, smoking was upheld by some of the writers as not only innocuous, but an excellent therapeutic and hygienic agent, a preservative against cold and starvation, a substitute for food, and a solace to the weary, whether of mind or body. Others traced to its use almost all evils, physical and social; especially reprobating it as producing insanity, paralysis, consumption, laryngitis, tonsilitis, short sight, emaciation, dyspepsia, and an infinity of other disorders, the bare enumeration of which would have been sufficient, we should have thought, to terrify the most devoted smoker. Amid this contest of opinion, the weight of the testimony of thoughtful men went against tobacco. The remarks made by Mr. Solly, of St. Thomas's Hospital, carry great weight with them. In relating a case of paralysis, he says:—

“There was another habit also in which my patient indulged, and which I cannot but regard as the curse of the present age,—I mean smoking. . . . I know of no single vice which does so much harm. It is a snare and a delusion. It soothes the excited nervous system for a time, to render it more irritable and feeble ultimately. . . . I believe that cases of general paralysis are more frequent in England than they used to be; and I suspect that smoking tobacco is one of the causes of that increase. . . . I believe, if the habit of smoking advances in England as it has done for the last ten years, that the English character will lose that combination of energy and solidity that has hitherto distinguished it, and that England will fall in the scale of nations.”

Another writer says that, in his experience, the blood

of smokers was instantly poisonous to leeches, and that fleas and bugs rarely if ever attack the smoker. He adds some remarks especially applicable to our subject :—

" If the evil ended with the individual who, by the indulgence of a pernicious custom, injures his own health, and impairs his faculties of mind and body, he might be left to his enjoyment, his *fool's paradise*, unmolested. This, however, is not the case. *In no instance is the sin of the father more strikingly visited upon the children than the sin of tobacco-smoking.* The enervation, the hypochondriasis, the hysteria, the insanity, the dwarfish deformities, the consumption, the suffering lives and early death of the children of inveterate smokers, bear ample testimony to the feebleness and unsoundness of the constitution transmitted by this pernicious habit." <sup>8</sup>

On the other hand, many men of high scientific attainments and sound judgment consider the use of tobacco, in moderation, and especially under certain circumstances of great hardship and privation,— as soldiers when on active service, for instance,— as not only not injurious but beneficial, both hygienically, therapeutically, and psychically ; whilst, in common with their opponents, they recognize freely the very deleterious consequences attendant upon its abuse, manifested particularly in various nervous lesions which eminently indicate degeneration. It is probable that were society in a more natural condition, or one more in accordance with the most obvious rules of hygiene, no poisonous agent, narcotic or stimulant, would be habitually desirable or allowable. But want and misery, unhealthy dwellings and occupations, the rapid whirl and contest of life, the wear and tear of hand work and brain work ; rivalry, emulation, anxiety, and all the corroding passions and

affections, with the thousand irregularities that help to form the sum of modern existence, — all these constitute for society what may fairly be called a diseased state, which may properly be counteracted by narcotics in some form. It may be that they are producing various forms of ill ; but we do not know quite certainly what they may prevent, nor what strange new nervous phenomena might be manifested if we should attempt to "put new wine into old bottles," by adapting a rigorously simple regimen, freed from all stimulants and narcotics, to so clearly unnatural a mode of life as the mass of men now lead. The urgent need which all peoples appear to feel for these agents in some form, the craving after, and the determination to have, them at whatever price, seem to me to indicate something more than a mere moral dereliction, and to point out some stern necessity in the constitution of man or society, which may not be gainsaid. Amid all the evils, too, which arise from the abuse of alcoholic liquids and tobacco, and they are proteiform, we are not without grounds of consolation. Perhaps there are few nations of Europe where certain classes of the population drink more habitually, and smoke more constantly, than in England. Yet the rate of mortality is lower in England than in any other European nation, although it is to be feared that this rate is slowly increasing ; but mass for mass, or man for man, it is readily acknowledged that no people can compete with our own, whether for energy, or endurance, or bodily labor.

But climate, soil, and food exercise a degenerative influence, at the least as strong as those already noticed. I have given, in the introductory observations, some illustrations of the effect of a marshy residence on the people. I add another very striking instance, condensed from Montfalcon's account of the inhabitants of La Bresse.<sup>9</sup> The Bressans, disinherited by nature, feel only the burden

of life ; the mournful influence of their climate is impressed upon their features ; it modifies to an extraordinary extent their functions and faculties. They are born sickly, and they cease to live at what should be the age of vigor. All the elements conspire to the ruin of the Bressan. The air he breathes, the water he drinks, are both poisoned ; his miserable dwelling is scarce a defence from a pernicious atmosphere ; his food is coarse and insufficient, and the kind of labor which he pursues amid humid forests and morasses does not permit him to anticipate a brighter future. His stature is short, his bones rickety, his skin sallow, thin, and unhealthy, his muscles flabby and undeveloped, his features tumid, his body swelled and dropsical. Scarcely has he quitted the breast when he begins to languish and emaciate ; a large proportion die before the age of seven ; those who survive hardly *live*, they *vegetate*. They are ever subject to dropsies, fevers, hemorrhages, chronic ulcers, and a host of other diseases, which would render life intolerable were it not for a corresponding apathy of mind. Melancholy, indifference, a sort of imbecility, is the habitual expression of a countenance rarely modified by passions. Old age commences at forty-five ; they are decrepit at fifty-five ; few reach sixty. “*We do not live*,” said one of these wretched creatures on one occasion, — “*we do not live ; we die !*” The children born of such parents are necessarily degenerate, and being, in addition to their inherited cachexia, always exposed to a continuance of the same original exciting cause, they are ever progressively deteriorating. The population diminishes, and must finally become extinct unless supported by immigration.

The *marsh*, producing the poisonous miasma, requires for its formation the following conditions : An argillaceous soil, preventing the filtration of the water ; a basin

where the waters may accumulate, and where organic matter may decompose ; and a temperature high enough to determine the evaporation of water charged with a miasmic principle, more or less deleterious according to the nature of the putrid matter contributing to its composition. But these conditions need not all be assembled in what can openly be recognized and spoken of as a *marsh*. They may be found in full activity in the midst of our large cities, producing not only the acute phenomena of fever and endemic complaints, but also the degradation and *etiolation* of the race to an extent which hardly yields to those already noticed.

But it is not the malaria alone of large cities that produce these results. The absence, insufficiency, and impurity of the nourishment, the abuse of alcoholic liquors and sensual pleasures, the absence of all intellectual and moral culture, give a fearful assistance in producing degeneration. It would be a stupendous work to give even the most concise analysis of all the details tending to prove this position, drawn from the various official reports of the various sanitary commissions, with regard to our large towns. But it is occasionally profitable to us to know how we and our country appear to our neighbours ; and I shall therefore give one or two extracts from M. Léon Faucher's commentaries on Wolverhampton, premising that his facts are taken, in some instances *verbatim*, from the "Report of the Children's Employment Commission." He first describes the crowding together of the dwelling-houses of the working classes, which he compares to beaver-huts, only that from the houses there can be seen no green field, nor any fresh air enjoyed. They are surrounded by "stagnant pools of water the color of dead porter, with a glistening metallic film over them."<sup>10</sup> He then proceeds :—

"It is certain that under the combined influence of

malaria and privation the constitution degenerates, and the blood is impoverished. The enfeebled condition of the race is particularly manifest in the children ; the greater part are meagre, delicate-looking, and sometimes deformed, the girls especially. . . . The education of early childhood is absolutely none. The child of five years nurses the child of two, whilst the brother or sister of seven watches over both, and keeps the house in the absence of the parents the whole day. To facilitate this, the mothers administer to the nurslings preparations of opium, as is the case also in Manchester. . . . Another pathological phenomenon manifests itself, which we believe to be inevitable in the morbid degeneration of the species, that is, the *arrest of development* in the intellectual faculties. Their intellectual existence is limited to a certain age, beyond which not only the faculties seem insusceptible of *further* evolution, but those children even who have been able to learn forget irremediably the few ideas they have acquired.

"The moral condition of the people is no less sad. But one remarkable and noteworthy fact is developed by the inquiry, that, notwithstanding the general corruption of manners consequent upon drunkenness and unnatural accumulations of people in confined lodgings, there are but few instances of seduction, and few natural children. *La pauvreté du sang, la maigre chère, et l'épuisement qui suit le travail, ne laisse aux jeunes filles ni temps, ni force, ni désir pour le mal.* And thus the unfortunate creatures are protected against the consequences of vice by the very excess of their sufferings ! But the corruption of the soul is there, though the prostitution of the body be checked by such causes."

It is some few years since these lines were written. Let us hope that we have improved matters to some small extent since then, both in Wolverhampton, and

also in Westminster, Whitechapel, Liverpool, Manchester, and many other places on which the Commission animadverted in terms not far removed from those above quoted.

If we had any doubts as to the propriety of considering the conditions just now enumerated as instances of true degeneration, they would be removed by continuing the investigation in the districts where cretinism abounds. Cretinism is certainly one of the best and most distinctive illustrations of morbid degeneration in our species. Perfect cretins are *specially characterized idiots*, whose bodily formation is as stunted and imperfect as their mental faculties are undeveloped. They are *terminal links*, being unable to perpetuate their species. But between these complete cretins and their sound fellowmen there are numberless gradations, amongst which we find all the forms of "marsh degeneration" already alluded to; probably indicating that whatever it may be that determines the production of the one, the same influence, acting with increased intensity, is the cause of the other. The physical conditions for the production of cretinism are nearly the same as those above mentioned as existing in the marshy districts. In Savoy it is almost exclusively on argillaceous soils and those of chalky clay that goitrous and cretinous affections appear. Wherever there are hills formed of *clay schist*, or declivities of a black, glutinous earth, in which the rain-torrents dig deep trenches, or enormous deposits of gypsum, there we may be certain of finding people profoundly affected with cretinism and goitre. In our own country these conditions are found chiefly, or only, in some parts of Derbyshire.

I must now very briefly examine the influence which insufficient, imperfect, or exclusive diet has upon the determination of degeneration. Fortunately we in this country know but little of the fearful effects of diseased

grain in producing epidemic or endemic disorders. In other countries, where rye and maize form a great part of the diet of the lower orders, ample illustrations are to be met with. In certain years the rye is affected with a disease manifested in the production of "spurs," called *ergot*, and the eating of this diseased grain in considerable quantities produces one of the most fearful affections with which we are acquainted.<sup>11</sup> I will not enter into any detailed description, but merely say that one of the prominent symptoms is a dropping off of the limbs from gangrene, with most intolerable sufferings. It is, when severe, almost the most fatal affection known. In the mildest epidemics half the attacked died; in others, the mortality was general. In the epidemic of 1099, none escaped who were once affected; in that of 994, 40,000 individuals died of it in the south of France. M. Morel illustrates this part of the subject from the epidemics of 1769 and 1772 chiefly, and in so doing takes occasion to point out that epidemics are not isolated facts, but are intimately connected with various widely extended cosmical changes. He attributes the disease of the grain to wet seasons, and alludes to the floods and inundations, the earthquakes and electrical phenomena, the fogs, and the immense amount of insect life, in those years. Pellagra is a disease due to the feeding on maize in Europe, which in northern latitudes is always imperfectly developed. The cause being constant, the disease is endemic.

The connection of the convulsive affection called ergotism with the diseased rye is thus indicated:—

1. All the persons attacked had eaten rye-meal.
2. They experienced immediate amendment on change of diet.
3. They constantly relapsed on returning to that kind of food.
4. The rye of these years contained a very large quantity of *ergot*.
5. This *ergot* appeared to be more powerful in its effects than in other years.
6. The

rye itself was altered, and appeared to possess some of the properties of the ergot.

The consideration of these diseases sheds a gleam of light, lurid though it be, upon many of the fearful epidemics of the Middle Ages, the causes of which have been, and still are, hidden in so much mystery. In tracing the source of the maladies under present consideration to the change in the principal article of food amongst so many millions, and reflecting also that rye is by no means the only grain susceptible of such a morbid transformation as to become poisonous, perceiving also the points of analogy between these affections and many others from time to time devastating large districts, we cannot fail to be struck with the important bearing which this subject has upon general hygiene, and the urgent and paramount claims for its consideration medically and administratively. For although we know nothing in this land of such fearful epidemics as these, surely we may infer the less from the greater. We see sporadic cases of such diseases as those just sketched, — we see them in localities and under circumstances where the causes of degeneration are most rife, where nutrition in particular is most imperfect, and where in general the moral tone is low, and hygiene utterly neglected. It would appear then to be no hasty conclusion, that similar causes are in operation, though on a less extended and fatal scale.

Insufficient nourishment, as might be expected, leaves its traces upon humanity in various ways ; yet we have not data sufficiently accurate and extensive to enable us to say positively what must be considered sufficient, or the contrary. It is well known that famines do not occur without being accompanied by disease, and positive starvation must necessarily be deleterious ; yet in all these cases mixed causes are in operation, rendering it difficult to ascertain with accuracy what amount and quality of

food are necessary for sustaining life and health. Buffon is of opinion that "it is in the action exercised upon the economy by nourishment that we must seek the principal cause of the varieties of form and feature in the human race"; and also, that "gross, unhealthy, or ill-prepared nutriment causes the human race to degenerate: all the nations that live miserably are ugly and ill-formed." Consequently, people living under a civilized government and leading a regular life must have greater advantages over nomadic tribes, or where every individual must provide for his own support, and alternately suffer hunger and the effects of an excess of food, often of bad quality. These latter might, perhaps, after being inured to it, have more endurance of labor and suffering, but it would only be manifest *in those who survived the test*. There might also in such tribes be found a smaller number of defective or deformed persons, as has been alleged to be the case. But there is an obvious reason for this. In civilized society the helpless, from whatever cause, are cared for by the community; but amongst savage tribes, where each individual lives by his own corporeal qualifications in the "struggle for life," those who are feeble and imperfect perish by the common law of nature.

It is stated on good authority, that those populations which subsist exclusively upon vegetable diet, and that in insufficient quantity, are less vigorous, and can support less fatigue than others, and the proportions of the limbs are altered. The Hindoos, according to Dr. Prichard, have the arms much longer and less muscular than the Europeans, and the handles of their sabres are too small for English hands. It is an unquestioned fact that English laborers, who eat more animal food and drink more fermented (malt) liquor than those of any other country, can accomplish a much greater amount of work than these, *cæteris paribus*. There is an objection to

these views occasionally propounded by vegetarians, that certain religious orders in the Romish Church, such as the Chartreuse, have exceedingly scanty nourishment without suffering from it, and that such diseases as do occur amongst them are apparently due to plethora, or at least require depletion. It is certain that under no circumstances, even those of illness, do they eat animal food in any form ; only during six months in the year are they allowed small quantities of milk, fish, cheese, and eggs. Their ordinary diet consists of pulse, roots, and pot-herbs, dressed with butter or oil. They have only two meals in the day, and from September to Easter only one. It must, however, be remembered, that the regularity of their life and manners, and the necessary freedom from vices, will greatly tend to counteract the depressing effects of such a regimen. But, in addition to this, the candidates for this order are carefully sifted. They present themselves at adult age ; there is a year of probation ; and if in any particular the novice is found unable to bear the severity of the discipline and regimen, he is rejected. Thus only those are admitted who are of strong, vigorous constitution, and have demonstrated their power to endure privation.

Closely connected with the subject of *insufficient*, is that of *exclusive* nourishment, and particularly that by the potato. Of its evil effects in our own realm we know but little, except when the potato is diseased. The evils that may be supposed to result from its predominant use in Ireland may possibly be due to other and mixed causes. In other countries, however, it is supposed by some writers to have exercised a baneful influence on the population. Dr. Huss attributes a considerable proportion of the endemic Scandinavian maladies to this diet ; and congratulates himself that the potato disease has compelled the inhabitants to return to the cultivation

of other alimentary plants, which they had too much neglected. Haller, Kortum, Weber, Neumann, and many others, affirm that the over use of this vegetable causes scrofulous affections. Swainson \* relates it as a curious fact, that the aborigines of New Zealand had no knowledge of scrofulous affections up to the time of the introduction of the potato, but after that they have been cruelly tormented thereby. But it must be remembered that the New-Zelanders, concurrently with the potato, received from the Europeans the gifts of small-pox and other diseases, as well as the abuse of alcoholic liquors ; facts which must certainly weigh heavily in any calculation as to causation. It is possible that in all countries where scrofula prevails, a very exclusive use of the potato may have tended to aggravate its ravages, and to produce general deterioration, which may indeed be said of the *exclusive* use of any article of diet ; but it is going too far to attribute the whole evil to such a source. From all these considerations, however, we may conclude how difficult a thing it is to arrive at anything like truth, where the elements of calculation are so involved and complex.

Thus far we have been concerned chiefly with causes of degeneration acting singly. But there are circumstances where we find many of these causes acting in combination, and producing results more extended and more intense in proportion to the complexity of the influences in action. No better illustration can be found of the operation of these *mixed causes* than in the history of certain conquests, where the victors and the vanquished alike suffered. Here we find the influence of all the intoxicant agents, conjoined with climatic agency, and the neglect of all the ordinary hygiene of nations, the relations of conquerors to conquered, the introduction of new habits, manners, and diseases. Hence re-

\* "Climate of New Zealand."

sults the disappearance, in many instances, of the indigenous races, and, failing their disappearance, their almost inevitable degradation.<sup>12</sup>

The history of the Spanish and Portuguese conquests abounds with illustrations of these points. The conquered races have wellnigh disappeared ; whilst the conquerors have greatly degenerated, and their mixture with the aborigines has produced a degraded race, which presents no element of perfectibility in the future. For instance, in Malacca there remain 3,000 descendants of the old Portuguese conquerors. Their fathers were the companions of Vasco de Gama and Albuquerque ; yet *they* are in a state of utter degradation, even as compared with the aborigines amongst whom they dwell. They bear chiefly great names, but they have no idea of their ancestry, or their glorious deeds ; even tradition is lost. Their degradation presents itself under its characteristic forms, — stunted growth, physical ugliness, defect of viability in the children, obtuse intelligence, perverted instincts, and a succession of progressive morbid transformations, reaching finally the extreme limits of imbecility. Dr. Yvan, from whom these details are chiefly taken, adds, that they are in the most frightful destitution, living almost promiscuously, like wild beasts ; they do not till the ground ; they live without any social laws ; they have no priest, nor any form of legislation. They have no idea of time, and appear incapable of conversation. The men smoke, and the women chew betel-nut, "*tenant suspendues à leurs mamelles affaissées quelques avortons débiles.*"

In inquiring into the causes of this degeneration, we first meet with the crossing of the races, to which the Portuguese have shown less antipathy than the Dutch, English, or French. Climatic agency exerts its powerful influence of enervation ; but more than all this is

the fact of the adoption of a system (or rather an absence) of hygiene and morals, simultaneously with the mixture of breed, which belonged neither to themselves nor to the aborigines at first, but has grown out of the despair or apathy of the one, and the luxurious sensuality of the other. M. Morel thus comments on these facts :—

“ It is from not having comprehended these ideas, so simple in appearance, that, in their relations towards the people of the New World, Europeans have generally failed in their mission of civilization. Thus it has happened that, instead of assimilating the aborigines to themselves by the intellectual and moral element, which tends to regenerate races and to raise them from their decayed condition, they have imposed customs upon them incompatible with the *infantile* condition in which they were found ; they have developed in them desires dangerous to satisfy, and appetites of the grossest character. . . . It is sad to confess that the anthropological science of the eighteenth century has contributed to this result, by determinedly classing these races as a *distinct species*, — races whose differences ought to be examined only with reference to those causes which have modified naturally, or morbidly, the one primitive type. . . . The contact of the people of the Old and New Worlds has been attended generally with such unfortunate results, that many authors consider<sup>18</sup> that when two forms of civilization are in presence, assimilation cannot take place under the ordinary conditions of progress in humanity ; and thus they explain the extinction of many American races, and the return of others, once civilized, to a savage life, with instincts more depraved than before. They find, further, the proof of this in the presence, in the midst of Europeans, of the melancholy remains of ancient races, never

completely assimilated to our forms of civilization, or who have only adopted our vices, and become affected with our diseases."

I have thus briefly and imperfectly reviewed a few out of the very many causes of human degeneration alluded to in my original programme, indicating from time to time their connection, in a causative aspect, with mental disease, and other profound lesions of the functions of the nervous system, and *a fortiori* with that plentiful harvest of vice and crime of which these are but the seeds. The limits proposed to myself for this subject forbid the entering upon any further details. Nor is it necessary; for the *modus operandi* is much the same in all cases, consisting in the production of an enfeebled nervous system, a polarity towards all temptation, and a will and power of resistance proportionally diminished. I cannot now do more than barely mention that there are other causes of degeneration, especially in nations and empires, of a different character to any of those we have been discussing, viz. those connected with luxury and material prosperity. The operation of these causes is too complex and too important to be hastily treated. Reviewing the ground over which we have passed, we have found that in certain habits, manners, and customs; in certain phases of the social condition in which man exists; in certain circumstances connected with the food he eats, the air he breathes, the water he drinks, and the soil upon which he lives,—there are degenerating influences, the combined result of which is to form, in every society, classes morbidly modified, whose contact with the sound part of the population is a perpetual source of danger; classes who possess neither the understanding of the duty nor the sentiment of the morality of actions, and whose minds are not susceptible of being enlightened or even consoled by any religious idea. Some of these varieties have been

justly designated by the title of THE DANGEROUS CLASSES. Hitherto these unfortunate beings have been *the* obstacle *par excellence*, and stumbling-block in the way of all effective legislation. Perhaps, if the theory of their production that we have been considering be correct, and be received as such, a new light may be thrown upon the treatment that such cases require, when they are viewed, not so much as individually criminal, as unfortunately resuming in their own persons the evil tendencies of their ancestry. It is in these matters, more than in any other, that a knowledge of the disease is half the cure. I cannot enter upon the vast subject of legislative, moral, and hygienic agencies necessary to counteract the influences which we have seen in operation. The day when the principles here indicated will be acted upon is still far distant. The poor will not cease out of the land, nor will vice; and whilst poverty and sensuality exist, there will be the production of the evils we have enumerated. Meantime, it is to the spread of the moral law, in its most extended sense, that we must look for the mitigation of this curse; the moral law, *aided by appropriate physical prophylaxis and hygiene*; for there are still moralists who have need to be convinced that the moral law can only become fully and truly fruitful in a sound organism.

### III.

## ON MORAL AND CRIMINAL EPIDEMICS.

PROBLEM : *Are mental affections and tendencies contagious, like bodily diseases ? If so, under what conditions ?*

WHILST the science of teratology was still young and unrecognized, Geoffroy St. Hilaire was one day told by a friend of a wonderful foetal monstrosity which had just been shown him. "Did you see at the same time," asked Geoffroy, "the abortive placenta and umbilical cord of the second foetus ?" "Then you have seen it ?" asked his friend. "No," was the answer ; "but these are the *necessary and inevitable* conditions of an *abnormal* development such as you describe."

The philosopher recognizes no accident. To him there is no phenomenon without *a cause*, an antecedent adequate to its production ; no cause but such as is reducible to *law*. He sees alike in the *normal* progress, and in the apparently *exceptional* conditions of the physical and moral world, only illustrations of law and order. The law may appear to be broken, nay, controverted by irregularities ; the order may seem to be disturbed by disorders ; anomalies may present themselves ; — yet in all this he sees but evidence of wider grasp and adaptability ; of general principles illustrated under conditions not yet investigated, yet susceptible of being so : the anomaly he knows to be only such in reference to his own finite powers and intelligence ; he even retains his conviction, — a conviction which affords the only stable foundation for all

science,—that similar elements, reacting under similar conditions, will produce similar results; and his confidence that the same power which regulates the succession of day and night, of seed-time and harvest, is in operation to "guide the whirlwind and direct the storm."

Does an earthquake spread ruin and devastation over a district; does famine or pestilence exhale its baneful influence over a continent; does a comet glare threateningly upon the earth for a time, and pass away into illimitable space; does the sea swallow up the dry land, or the land encroach upon the sea,—in all this he sees, not the evidence of any new and unknown, but the manifestations of the universal law, acting under conditions as yet imperfectly known to him.

Lastly, does war decimate whole kingdoms, or a moral blight pass over and corrupt a community or a nation; he knows that the passions, impulses, appetites, instincts, prejudices, and weaknesses of man are, as they ever were, the source of all moral disturbances. The elements are constant, though their combinations may be variable. Hence the *history* of yesterday is the *interpretation* of to-day, the *prophecy* of to-morrow. With this conviction of the constancy of the relation between cause and effect ineradicably fixed in the mind, he boldly yet cautiously sets about the investigation of these apparently *irregular* phenomena, and the conditions under which they occur. He collects and compares numbers of similar and analogous facts, he considers carefully the powers which are proximately operative in their production, he separates the casual from the universal, the essential from the adventitious, and analyzes the whole on strictly inductive principles.

And great is his reward! Not only are the irregularities themselves reduced to system and order, but, in their turn, they are made to contribute their quota to

the knowledge and definition of the very laws themselves from which they seem to err. It was by observation, on such principles as these, of the abnormal developments of animal structure, that Geoffroy not only constructed the science of teratology, but also laid the foundation for the discovery and definition of the true archetype of the osseous skeleton ; it was by analysis of the *irregularities* of the pendulum that the figure of the earth was determined ; it was by the observance of what were at first deemed to be *casualties* that polarized light was discovered, and all the laws of optics defined and advanced. But perhaps the most striking illustration of this principle that the world has ever witnessed has been presented during the last few years, in the discovery of the planet Neptune. Certain *irregularities* in the motions of Saturn and Uranus had long been observed, which were of so peculiar a nature that it even began to be conjectured that at the confines of our system *law* was not so certain in its operations as near the centre. It was evident, however, that this view, if received, would tend to sap the foundation of all science ; and men like Léverrier and Adams, who were content to recognize no effect without a definite and sufficient cause which would inevitably and invariably produce the phenomenon, boldly hypothesized the existence of such a cause ; and by pursuing a chain of inductive and mathematical reasoning and analysis, which appears almost superhuman, they were enabled ultimately to point their telescope to that part of the heavens where the disturbing body ought to exist, — *where it did actually exist*, and so to extend the knowledge of our planetary system twice as far into space as before.

The aspect of the present times leads us anxiously and earnestly to inquire whether some similar system of investigation may not be applied with advantage to

the solution of the startling problems which are everywhere presented to us. The science of Sociology is new and imperfect ; yet we are sure that it will afford no exception to the general rule which obtains in all : that, if perfected, it must be through a careful observation of its abnormal or exceptional, as well as its normal phenomena. Nothing is stronger than the contrast between mind and matter, as to their essential (or rather, *phenomenal*) nature ; but, on the other hand, nothing is more striking than the correspondence in their mode of development, and in the laws which they mutually obey ; such correspondence perhaps arising in some measure from the fact that mind is only manifested through its connection with matter, and also in many cases from the overpowering influence which each in turn exerts upon the other. As the body has its condition of health, including many gradations of energy and power, so the mind has its normal state, extending from the verge of imbecility to the intelligence almost godlike ; as the body is affected by diseases of excitement or depression, so the mind has its passions, its mania, its melancholy ; as plague and pestilence attack and hurry off their thousands and tens of thousands at one time, — so to an equal extent does a more terrific blight than this pass over a country or a continent, at variable and uncertain periods in the history of man, changing the whole aspect of his moral nature, and converting what was once the image and likeness of God into the semblance of a fiend. At one time the spirit of (falsely so called) *religious* controversy will arouse the most ferocious passions of which human nature is susceptible, provoking mutual persecutions, bloodshed, and wars ; at another an epidemic of resistance to constituted authority will spread over half a world (as in the year 1848), rapid and simultaneous as the most virulent bodily disorder. Again is the col-

*lective character* of mental phenomena illustrated by an anomalous psychological condition invading and dominating over thousands upon thousands, depriving them of everything but automatic action, and giving rise to the popular opinion of demoniacal possession,—an opinion in some sense justified by the satanic passions, emotions, and acts which accompany the state. At one period, the aggregate tendency is to retirement and contemplation; hence the countless votaries of monachism and anachoretism: at another the mania is directed towards *action*, having for its proposed end some Utopian scheme, equally impracticable and useless; hence the myriads who have forsaken their kindred, their homes, and their country, to seek a land whose stones were gold, or to wage exterminating war for the possession of worthless cities and trackless deserts.

Less disastrous than these in their influence numerically upon the mass of mankind, perhaps much more so in their demoralizing results, are those cases in which, in the absence of proper moral culture, the seeds of vice and crime appear to be sown under the surface of society, and to spring up and bring forth fruit with appalling rapidity and paralyzing succession. Here it is a forgery, bringing ruin upon thousands; there a suicide, the consequence and self-imposed penalty for other crimes. Now a brother's hand is raised against his brother, a son's against his father; now it is the mother who forgets even her natural instincts, and lifts a murderous hand upon her child; and again the nearest and dearest relation of life—that of husband and wife—is violently severed by the administration of secret poison. A panic seizes upon society; man is afraid "for the terror by night," and for the "arrow that flieth by day," for "the pestilence that walketh in darkness," and for the "sickness that destroyeth in the noonday." He

knows not whence the next stroke may come, so unexpected, so unnatural, is the source of these crimes ; the foundations of all social and domestic confidence are sapped by suspicion, and we think we hear again, as of old, the pathetic lament :—

*"It is not an open enemy that hath done this thing, for then I could have borne it ; neither was it mine adversary that did rise up against me, for then peradventure I would have hid myself from him ; but it was even thou, my companion, my guide, and mine own familiar friend. We took sweet counsel together, and walked together as friends."*

It is fearful to think how forcible an illustration of this kind of epidemic is afforded us by the history of the last few months (1856). Crime succeeds crime with unparalleled rapidity, like the monotonous strokes of a moral knell.

The phenomena are thus noticed by contemporary writers :—

"It is very difficult to refrain from the conclusion that we are, just now, living in the presence of an increased accumulation of greater crimes than has been before witnessed by the present generation. We do not forget the notorious criminals of the first portion of the present half-century, the Thurtells and Fauntleroys of that day ; but there was not that fearful constellation of crime, as we may term it, which we witness in these days, and which almost every week increases, by some deed which, either in the depth of the sin or the rank of the sinner, shocks and distresses the whole nation. Murders, forgeries, suicides, — suicides, forgeries, murders, — to say nothing of other sins, have come upon us alternately with fearful frequency, and in high places as well as low. No sooner had one case spread over the whole kingdom than another occurs to eclipse it, or to dispute a place with it in the public mind. The legisla-

ture, commerce, the race-course, the private family, alike contribute to swell the list ; the single apartment of the working classes and the stately halls of the aristocracy are equally the scene of 'lamentation, mourning, and woe.'"<sup>1</sup>

Another enters a little more into the causes of the same phenomena, particularly as to *imitation* :—

" An epidemic of murders seems to be raging just now. We can hardly take up a daily paper without reading of some fresh murder of more than usual atrocity, while the details of the great Rugeley case, dragged slowly to light by the untiring and unerring ministry of science, fill us with horror and amazement that such a series of such crimes should be possible in the broad daylight of our nineteenth century of civilization. . . . But the Rugeley case is far from being the only one which painfully occupies the attention of the public. During the last weeks, great crimes — especially murders — have succeeded each other with a rapidity which suggests and explains the title of our article. Crime propagates itself by infection, like fever and small-pox, and at times it seems as if the infection came abroad into the atmosphere, and exacted its tribute from every class and every district of the country. The laws of moral infection, and the propagation of moral disorders, are among the most recondite and difficult subjects of contemplation ; there is something fearful in the very thought that man may so abdicate his moral freedom as to bring his will and moral nature under the sway of laws as imperious and resistless as those which sustain and balance the orbits of the stars. But we cannot be blind to the fact. There is a large class of minds over which great crimes exert a kind of fascination, and those who have never trained themselves to exercise the responsibilities of moral freedom are liable to become the victims of the

strangest delusions, and catch readily the moral infection which is always lurking, and sometimes raging, in the atmosphere of our world. Let a woman fling herself from the top of the Monument, and the gallery has to be railed in like a wild beast's cage, lest the contagion should spread, and Monument-yard should become the Tyburn of suicides. Let a particular poison have been used with deadly effect in an ignorant and demoralized district, and it must be mixed with some alien substance to color it, lest it should become the instrument of systematic and wholesale butchery. '*Man that is without understanding is like the beasts that perish,*' said a wise one of old, and in nothing is he more beast-like than in the facility with which he becomes the slave of the laws he was set to govern, and buries his moral freedom literally in the dust."<sup>2</sup>

Whilst writing this very page, a report is put into our hands of an event which seems from its incredible audacity to put into the shade all those to which allusion is made in these passages. An independent gentleman, resident in one of our largest northern towns, is supposed to have poisoned his young wife with strychnine, actually administered before witnesses, in jelly and other articles of diet; boldly persisted in, in spite of her complaints of their *bitterness*, in spite of others tasting them and confirming her statement. The details are not yet fully known, and we would not prejudge the case; yet the evidence seems so strong and so direct as scarcely to admit of doubt.

[Shortly after this was written, the crime in question was fully proved, and the murderer executed. It appeared clearly from the evidence that the idea of the murder was suggested — apparently without other or adequate motive — by the Rugeley murder; and the fancied impunity from detection was inferred from the

conflicting *scientific* (!) evidence adduced in that case. This will be again noticed in the sequel.]

The last testimony which it is necessary to adduce as to the actual existence, at this present time, of an epidemic of crime, is part of the address of the Recorder, in the opening of the proceedings of the Central Criminal Court on March 3. It is of great value, as affording legal and official recognition of a most important fact. He thus contrasts the state of England now with its condition two years back :—

"He had before him a return of offences committed down to the year 1854, from which it appeared that, although undoubtedly there was a considerable increase in the amount of crime that had been committed down to that period, yet the increase was mainly in cases of ordinary felony of a trifling character, and was quite accounted for by the increase in the population and the increased amount of property in the country, and also by the improved condition of the police. As regarded crimes of violence, such as murder, manslaughter, attempts to murder, and other offences of that class, it appeared that during the same period there had been a diminution of such offences to the extent of thirteen per cent. It seemed, however, that it was the same in the history of nations as of individuals, that there were certain periods of great calamities without any apparent traceable cause. During the last twelve months, after having for forty years enjoyed the blessings of peace, they had been familiarized with all the horrors of war, and there was no doubt that during the same period the most heinous crimes had been committed by persons of high station, by persons also holding a high position in the commercial and banking community, and also by persons in a more humble position of life ; and in this court there had certainly been a most unusual number of cases involving

the destruction of human life. It was no part of his duty, or that of the grand jury, to enter into any consideration of the causes that had led to this state of things, nor whether it arose from any peculiar circumstances in the state of the country or of the law; but the subject was one that was entitled to grave reflection, and it certainly ought to urge them all to do everything in their power to extend education among the people, and to improve their condition, as the most effectual means for the prevention of crime."

For the investigation of this lamentable state of society we propose to make use of the same *calculus* which we have seen to be of such signal service in physical science, viz. to collect a number of analogous instances, and to analyze the conditions under which they occur, with a view to the ultimate solution of these questions:—

1. What is the condition of mind most calculated for the reception of morbid moral influences?
2. What are the causes and source of this condition?
3. What are the circumstances which *directly* excite and foster these evil tendencies?
4. As a corollary to these, — What are the moral hygienic means to be adopted for the check or prevention of such epidemics?

Were we only to examine the phenomena of disordered *action* in man, we should get but a very imperfect idea of his psychological condition in health and disease. The mind manifests itself by thought, word, and deed, and its disorders are shown by erroneous ideas, by incoherent discourse, and by unreasonable conduct. These are respectively liable to become epidemic, as in opinion, expression, and crime; and for the complete comprehension of the latter, it is necessary to examine instances of the other two forms. We shall therefore select a few

cases illustrative of each, giving the preference to those which have been marked by the most striking psychological phenomena, or which have produced the greatest effects upon the social and political condition of man ; only premising that, whilst disordered opinion and action have a much stronger tendency to assume an epidemic type than bodily diseases, their elements *are less complex*, and consequently more susceptible of investigation ; a position apparently paradoxical and fanciful, yet one which we believe to be in accordance with experience, and which we hope to illustrate afterwards. Many of the most remarkable epidemics, however, are compound, being complicated with physical disorder more or less evident ; and these are proportionately *more complex* as to their elements, and present more difficulties to the inquirer, than either form taken separately.

Nations, like individuals, have their periods of insanity, excitement, delusion, and recklessness. Mackay ("Popular Delusions") says that —

"Whole communities suddenly fix their minds upon one object, and go mad in its pursuit ; millions of people become simultaneously impressed with one delusion. We see one nation, from its highest to its lowest members, with a fierce desire for military glory ; another as suddenly becomes crazed upon a religious scruple ; and neither of them recovers its senses until it has shed rivers of blood, and sowed a harvest of groans and tears to be reaped by its posterity."

Pseudo-religion, opinion practical or speculative, life, property, emotion, all become in turn the subject or the motive for a maniacal epidemic. These collective or *imitative* tendencies appeared very early in the world's history. According to Maimonides, the earth had not been peopled 300 years when *all* turned with one accord to idolatry. Though his account is somewhat fanciful,

yet it affords a very probable *theory* of the origin of the class of delusions which, in one form or other, have kept possession of mankind ever since.

"In those days the sons of Adam erred with great error, and the counsel of the wise men became brutish ; and their error was this : they said, 'Forasmuch as God hath created these stars and spheres to govern the world, and set them on high, it is meet that men should laud and glorify and give them honor.' When this thing was come up into their hearts, they began to build temples unto the stars, and to offer sacrifice unto them, and to worship before them ; and this was the root of idolatry. And after this they began to *make images* of the stars, in temples and under trees, and assembled together and worshipped them. And *this thing was spread through all the world* ; so in process of time the glorious and fearful Name was forgotten." — MAIM. *In Mishn.*

Such was the first origin of idolatry and image-worship. After the Flood the same tendency was quickly manifested, but under circumstances which indicated a far greater moral perversion and psychical deterioration than before ; for this second falling away was especially amongst a chosen people, who had witnessed repeated instances of power which they knew could not reside in wood and stone. "These be thy gods, O Israel," said one, with the bitterest irony, "which brought thee up out of the land of Egypt," pointing to the golden calf which he had been compelled to make. How severely were they satirized by their own prophets ! Idolatry had now assumed its three typical forms, — the worship of imaginary powers, of carved images, and of the animate and inanimate objects of nature.

"I went in and saw ; and behold every form of creeping things and abominable beasts, and all the idols of the house of Israel, portrayed upon the wall round about. And

*there stood before them seventy men of the ancients of the house of Israel, with every man his censer in his hand ; and a thick cloud of incense went up. And he brought me to the gate ; and behold there sat women weeping for TAMMUZ (probably Adonis). And he brought me to the inner court ; and behold there were men with their backs to the temple, and their faces toward the east, and they worshipped the sun."*

The same tendency is indicated in Isaiah's withering sarcasm : —

*"He planteth an ash, and the rain doth nourish it. Then shall it be for a man to burn ; for he will take thereof and warm himself ; yea, he kindleth it and baketh bread ; yea, he maketh a god and worshippeth it ; he maketh it a graven image, and falleth down thereto. He burneth part thereof in the fire ; with part thereof he roasteth roast, and is satisfied. And the residue thereof he maketh a god ; he falleth down and worshippeth it and prayeth unto it, and saith, Deliver me, for thou art my god."*

And to these imaginary deities they sacrificed their sons and their daughters, causing them to pass through the fire. The epidemic of speculative opinion, followed naturally by actual crime, spread over the face of the whole earth ; and in this general falling away we find all the elements of the floods of crime which at variable periods since then have wellnigh submerged the moral world. What the condition of the earth was as to general morals and tendencies just before the Christian era, we may indicate by selecting the most refined and civilized of the cities, Rome ; and giving the impressions of their own writers, and in their own language, for the vices alluded to are too gross to be completely unveiled : —

*"Cum leno accipiat mœchi, bona, si capiendi  
Jus nullum uxori, doctus spectare lacunar,  
Doctus et ad calicem vigilanti stertere naso ;  
Cum fas esse putet curam sperare cohortis,  
Qui bona donavit præsepibus — "*

And as to the reward of merit, and the mode in which public trust was bestowed : —

“ Aude aliquid brevibus Gyaris et carcere dignum,  
Si vis esse aliquis; probitas laudatur, et alget.”

\* \* \* \* \*

“ — quando uberior vitiorum copia? quando  
Major avaritiae patuit sinus? ”

But even under this thin veil we may not sully our page with quotations illustrative of the special and universal vices of this vaunted era.

In such a profligate time was Christianity introduced into the world ; and for once at least in the world's history the tendency of the human mind to receive opinions *collectively* was directed in a right channel. Promulgated by a few unlettered men ; opposed with all the violence of a corrupt priesthood and a pagan court upholding doctrines which human nature felt to be humiliating ; persecuted even to the death, — Christianity triumphed, and became the religion of the civilized world. But it was not for long that its purity was preserved ; errors and heresies crept in ; and the doctrines which preached peace on earth and good-will towards men were made the pretext for passions the fiercest, persecutions the most diabolical, and wars the most sanguinary, that the earth has ever witnessed. There is no wrath and bitterness equal to that which arises in (so-called) religious controversy. Each opinion once promulgated spread like an epidemic, and parties were found to murder each other in support of their respective views, with the more zeal and implacability, the more incomprehensible and less important was the subject of dispute. Ultimately the Christian and the heathen could live without mutual persecution ; but the Monothelite and the Monophysite, the Pelagian and the Arian, ever viewed each other with the most uncompromising hostility.

It would require a large volume even to mention the names of the controversies which for centuries shook the church, even to its foundations ; we can but briefly allude to a few events, remarkable for their psychical characteristics, their rapid spread, or their bearing upon epidemics of later times.

The Gnostics of the second century originated from the attempt to combine the philosophy of the heathen world with the faith of the Christian. This, as well as the sect of the Manicheans, which arose in the third century, was chiefly remarkable for the incredible rapidity with which it spread, and for its persistency in spite of the severest methods used for its extirpation.

The fourth century is remarkable for the rapid increase of superstition, the reinstitution of *image-worship*, the adoration paid to relics, and the many pious frauds, as they have been termed, of the monks. At this time, too, originated that remarkable and long-standing epidemic, which has ever since exercised so powerful an influence over domestic relations and the world generally, — that of Monachism. Owing to the prevalence of a certain mystical preaching, vast numbers of men and women withdrew themselves from all society, endeavoring to live by contemplation alone, and mortifying the body by hunger, thirst, and labor. They were gradually reduced to system by Antony, who prescribed rules for their conduct. Some, as the Anachorites, resisted all rule, lived separately, frequented the wildest deserts, fed upon roots, and slept wherever the night overtook them ; and all this to avoid the sight of their fellow-creatures. Other sects, as the Sarabaites, were guilty of the most licentious practices, and were indeed profligates of the most abandoned kind.<sup>8</sup>

The fifth century produced one of the most extraordinary and ridiculous manias that can well be conceived.

Simeon, a monk, adopted, as a mark of especial sanctity, the singular device of spending thirty-seven years of his life on the top of a high pillar.

"Seduced by a *false ambition*, and utterly ignorant of true religion, many of the inhabitants of Syria and Palestine followed the example of this fanatic ; and what is almost incredible, this practice continued in vogue till the twelfth century."<sup>4</sup>

The rise and fall of Mahometanism, in the seventh century, is one of the most remarkable instances of the rapid propagation of ideas and principles. Doubtless the terror of Mahomet's arms, and his repeated victories, were very irresistible arguments ; but at the same time his law was wonderfully adapted to the corrupt nature of man ; its requirements were few and easy, its articles of faith simple, and its promised rewards marvellously acceptable to the manners and customs of the Eastern nations, and their favorite vices. "It is to be observed," says Mosheim, "further, that the gross ignorance under which the Arabians, Syrians, and Persians, and the greater part of the Eastern nations, labored at this time, rendered many an easy prey to the artifice and eloquence of this bold adventurer." When we add to this the dissensions and animosities amongst the Greeks, Nestorians, and others, which filled the East with carnage, assassinations, and other enormities, such as made the very name of Christianity detestable, we may cease to wonder at the spread of any new religion. Will not an attentive consideration of these reasons in the aggregate suggest to the reflective mind the source of some of the remarkable heresies of the present day, as our Mormonism and Socialism, our Spirit-Rapping, and the German Apostolico-Baptism ? — The epidemic of the eighth century was a violent contest, which overspread the whole Christian world, between the Iconoduli and the Iconolastæ, con-

cerning image-worship, as their names imply. The ninth century presents us to the origin of the trials of innocence, which for ages continued so popular, — by water, by single combat, by the fire-ordeal, and by the cross.

The first is of great interest, as being afterwards so universally made use of, in the detection of supposed witches. The person suspected of any crime was thrown into water, the right hand bound to the left foot : if he sank, he was esteemed innocent ; if he floated, it was evidence of guilt. In the trial by duel, the survivor was considered to have proved his innocence. In the fire-ordeal, the accused person walked barefoot on heated ploughshares, or held a ball of red-hot iron in his hand ; if innocent, these feats would be accomplished without injury. In the last form of trial, that by the cross, the contending parties were made to stretch out their arms, and he that could continue in this posture the longest gained his cause. A different account of the test of the cross is given by many writers, but this appears to have been the original one. The universal belief in the infallibility of these tests is not the least singular feature in the mental aspect of these ages.

In the tenth century a strange panic seized upon men's minds, and produced the most disastrous effects. They conceived that the end of the world was close at hand, and vast multitudes forsook all their civil and domestic ties, gave their property to the Church, and repaired to Palestine, where they imagined they should be safer than elsewhere. An eclipse of the sun or moon was considered as the immediate precursor of the end of all things ; the cities were forsaken, and the wretched inhabitants did actually hide themselves in caves and rocks. Others attempted to bribe the Deity, by great gifts to the Church ; others pulled down palaces and temples,

saying that they were of no more use. "In a word, no language is sufficient to express the confusion and despair that tormented the minds of miserable mortals on this occasion."

Consequent upon this was perhaps the most extraordinary epidemic into which fanaticism ever ran. We have said that vast multitudes left their homes to go to the Holy Land : not a meteor fell across the sky, but sent whole hordes on the same delusive errand. The hardships they suffered on the way were almost incredible ; yet they were exceeded by those experienced from the Turks when they reached their destination. Persecution of every kind awaited them ; they were plundered and beaten, and not allowed in most instances to enter Jerusalem. By degrees, this particular epidemic dread began to subside, and some of these pilgrims returned to Europe full of the indignities which they had received. Amongst them was an enthusiastic and eloquent, perhaps half-crazy monk, Peter the Hermit, who, on his return, convulsed Europe by his preaching and his story of their wrongs. Then resulted a scene such as the world had never witnessed. In the insane idea of wresting Palestine from the Turks, countless myriads of fanatics left their homes, and traversed Europe under circumstances unparalleled in the history of man. Why should we dwell upon the details of the Crusades ? Hundreds of thousands perished on the way ; the roads and fields were heaped up with corpses ; the rivers were dyed for miles with their blood. Yet again and again schemes for the accomplishment of the same purpose were adopted ; now the elements were the lowest and vilest of the people, — now the flower of Europe's chivalry, — and again thousands of *children* formed a separate crusade of their own. Millions of treasure were expended, and two millions of lives sacrificed, in the two

hundred years during which this disastrous moral epidemic prevailed. And *this* ended! — the philanthropist would fain hope that such a fearful convulsion would not pass without some purification of the atmosphere.

Scarcely had the excitement of Europe subsided when another scourge made its appearance. The great Plague, or Black Death, of the fourteenth century, appeared in 1333 in China, and passing over Asia westward, and over Europe and Africa, carried off about one fourth of the people. In Europe alone it is supposed that twenty-five millions fell victims to this fearful pestilence.

All epidemic diseases have their *moral* aspect; and this one was attended by a constellation of fanaticisms and delusions such as man has never witnessed before or since. The belief in witchcraft was already very prevalent, and there had been some isolated persecutions directed towards it. But the specific moral aberrations connected with this period were : —

1. The rise and spread of the Flagellants, or Whippers.
2. The wholesale murder of the Jews, on the suspicion of having poisoned the water.
3. The dancing mania.

The compound aspect of these three has more than an ordinary interest to the philosophic mind, arising from the fact, that although the first two appear to be of a strictly *psychical* nature, a *somatic* origin is indicated, from their extremely close connection with the latter, which was accompanied by the most striking and uniform physical derangements, very analogous to the phenomena of hysteria. The sect of the dancers, indeed, seems to serve as a connecting link between mental and bodily affections, and to lead by a natural transition to many of the convulsive forms of religious worship with which the present century is familiar, as

the Jumpers, the Shakers, the preaching mania in Sweden in 1842, &c.

The primary notion of the "Whippers" may be traced to the fact, that for ages flagellation had been considered by the Church the most appropriate punishment and atonement for vice. Horrified by the ravages of the plague, in deadly terror of its advances, the people thought to stop the vengeance (as it was supposed) of Heaven by mortifications and penance. Almost simultaneously, in many parts of Hungary and Germany, large masses of the lowest orders of the people formed themselves into bodies which marched in procession through the cities, robed in sombre apparel, covered with red crosses, bearing triple knotted scourges, in which points of iron were fixed.

"It was not merely some individual parts of the country which fostered them ; all Germany, Hungary, Poland, Bohemia, Silesia, and Flanders did homage to the mania. The influence of this fanaticism was great and threatening ; resembling the excitement which called all the inhabitants of Europe into the deserts of Syria and Palestine 250 years before." — HECKER.

They performed penance twice a day, scourging themselves and each other till the blood streamed from them ; and this they blasphemously said was mixed with the blood of the Saviour. Flagellation was held to be superior to, and to supersede, all other observances ; the priests were forsaken, and these "Brethren of the Cross" absolved each other, and took possession of the churches, where their enthusiastic songs affected greatly the minds of the people.

As might be expected, all this speedily resolved itself into licentiousness and crime. The Church and the secular arm combined to put a stop to this universal frenzy ; veneration turned, in many places, into persecu-

tion, and public burnings of the chief instigators of the riots became common. During this and the early part of the next century a constant contest was carried on with them, but the sect was found most difficult to eradicate.

Simultaneously with these proceedings was instituted a bloody and barbarous persecution of the Jews. Amongst the other absurd conjectures as to the source of the terrible pestilence which was everywhere raging, the Jews were supposed to have poisoned the wells or infected the air. They were pursued with relentless cruelty,—tortured, in many instances, into a confession of crimes which had never been committed, and then burnt alive.

“ Whenever they were not burnt, they were at least banished ; and so, being compelled to wander about, they fell into the hands of the country people, who, without humanity, persecuted them with fire and sword.” — HECKER’S *Epidemics*.

In some places, driven to desperation, the Jews fired their own quarter of the town, and so perished. At Strasburg, 2,000 were burnt alive in their own burial-ground. In Mayence, it is supposed that 12,000 Jews were slaughtered by the Flagellants.

“ At Eslingen, the whole Jewish community burned themselves in their synagogue ; and mothers were seen throwing their own children on the pile, to prevent their being baptized, and then precipitating themselves into the flames.” — HECKER.

A singular feature presents itself in the progress of this epidemic persecution, as in that of witches, to be shortly noticed, viz. that, after the rage had lasted some time, many confessed voluntarily, and without torture, to the crimes of which their countrymen were accused ; and it even appears probable that some actually

attempted to commit them by putting certain poisons into the waters. Apparently an irresistible impulse leads to acts of this nature, from the constant dwelling of the mind upon the accusations and reports on the subject. We meet with analogous instances in all epidemics of crime, and it is not unfrequent to meet with those who, from a morbid desire for notoriety, will insist upon confessing crimes which have evidently not been perpetrated, such as the murder of people still living.

The humanity and good sense of Clement VI. at last succeeded in putting a stop to this wholesale butchery ; but it was not till after scores of thousands had fallen victims to the insane and cruel delusion.

The *Dancing Mania* next claims attention. In his preface to an account of this affection, Hecker makes some interesting reflections, which we here quote :—

“These diseases afford a deep insight into the workings of the human mind in a state of society ; they expose a vulnerable part of man,—the *instinct of imitation*,—and are therefore very nearly connected with human life in the aggregate. It appeared worth while to describe diseases which are propagated on the beams of light, on the wings of thought, which convulse the mind by the excitement of the senses, and wonderfully affect the nerves, the media of its will and feelings. It seemed worth while to attempt to place these disorders between the epidemics of a less refined origin, which affect the body more than the soul, and all those passions and emotions which border on the vast domain of disease, ready at every moment to pass the boundary.”

About 1374, at Aix-la-Chapelle, the singular spectacle was presented of groups of men and women who would join hands, forming a circle, and dance for hours together in wild delirium, till they fell to the ground utterly exhausted.

"They then," says Hecker, "complained of extreme oppression, and groaned as if in the agonies of death, until they were swathed in cloths bound tightly round their waists, — a practice resorted to on account of the tympany which followed these spasmodic ravings; but the bystanders frequently relieved patients in a less artificial manner, by thumping and trampling upon the parts affected."

It seems that in this and the analogous affections, — the preaching mania in Sweden, the convulsive disorders in Shetland, and the *convulsionnaires* in France, — the most brutally violent means were adopted for the removal of this tympany, not only without pain to the sufferer, but with actually temporary relief. Referring to this last class, M. Littré says: —

"Ni les distensions ou les pressions à l'aide d'hommes vigoureux, ni les supplices de l'estrapade, ni les coups portés avec des barres ou des instruments lourds et contondans, n'étaient capables de léser, de meurtrir, d'estropier les victimes volontaires."

Many called out for heavy weights to be thrown upon them, and for the blows to be administered with more force upon the abdomen. A stone about thirty pounds in weight, called *a pebble*, was in frequent use for this purpose.

This dancing mania rapidly spread over the Netherlands, which were overrun with troops of half-naked dancers.

"At length the increasing number of the affected attracted no less anxiety than the attention that was paid to them. They took possession of the religious houses, processions were instituted, masses were said for them, and the disease — of the demoniac origin of which no one entertained the least doubt — excited everywhere astonishment and horror. They were much irritated at

the sight of red colors, the influence of which on the disordered nerves might lead us to imagine an extraordinary accordance between this spasmodic malady and the condition of infuriated animals." — HECKER, p. 89.

In this, as in all other epidemics, opportunity was found for the wildest licentiousness ; gross impostures mixed with the real disease, and ultimately the resultant vices excited the indignation of clergy and laity, who united to put a stop to the disorders. Meantime, the plague crept on, and found abundant food in the tone of thought which prevailed in the fourteenth and fifteenth centuries, causing a permanent disorder of the mind, and exhibiting, in those cities to whose inhabitants it was a novelty, scenes as strange as they were detestable.

Nothing affords a more striking illustration of the tendency which opinion, emotion, and action have to assume a *collective* aspect, than the subject of WITCH-CRAFT, whether considered as to its millions of votaries, its tens of thousands of persecutors, its myriads of victims, or the curious psychological phenomena developed by the mutual reactions of these. Mackay (*op. cit.*) writes thus :—

"Europe for two centuries and a half brooded upon the idea, not only that parted spirits walked the earth to meddle in the affairs of men, but that men had power to summon evil spirits to their aid to work woe upon their fellows. An epidemic terror seized upon the nations ; no man thought himself secure, either in his person or his possessions, from the machinations of the Devil and his agents. Every calamity that befell him he attributed to a witch. France, Italy, Germany, England, Scotland, and the far North, successively ran mad upon this subject,—thousands upon thousands of unhappy persons fell victims to this cruel and absurd delusion."

The summary of belief was something to this effect. At the command of any one who would sell his soul, in exchange for certain services during a stated period, there were innumerable demons,—Wierus says only 7,405,926,—incubi and succubi, that is, male and female, taking on various forms, according to the circumstances required,—but if *human*, always imperfect in some respect.

They were bound to obey any order, except to do good, in which case they disobeyed, and visited their displeasure upon the offender. At uncertain intervals,—generally on the Friday night,—there were meetings, called the “Sabbath,” at which those who in the intervals had done sufficient evil were rewarded; and those who had not, received chastisement from Satan himself, who flogged them till they could neither sit nor stand. New-comers were admitted by the ceremony of denying their salvation, spitting upon the Bible, and vowing obedience to “the master.” Their amusement on these occasions was a dance of toads,—their banquet, things too disgusting to mention. A general examination was made to know if each possessed “the mark,” by which they were recognized as the “Devil’s own.” This mark was insensible to pain. Those who had it not, then received it. When the cock crew, the Sabbath ended, and all disappeared.

The persecutions on account of witchcraft were carried on from various motives,—political, as in the extermination of the Stedinger in 1234 by Frederick II., assisted by the Duke of Brabant and others; and in that of the Templars, accused of sorcery by Philip IV. of France and burned; religious, as in the persecutions of the Waldenses under this pretext; and superstitious, as in the innumerable trials for witchcraft with which the Middle Ages abound. It is computed that during the

prevalence of this epidemic, at least one hundred thousand persons were burned as witches or sorcerers.

Illustrative of the strange psychological phenomena manifested in the votaries of this belief, and their *collective* character, we quote some facts and observations from a profoundly philosophic article in the *Revue des Deux Mondes* for February 15, 1856, by M. Littré. It will save repetition to remark, first, that there is a singular uniformity in the confessions of those accused ; second, that although many confessions were elicited by torture, and many made through *dread* of torture, yet, due allowance made for all these, there remained many who confessed *voluntarily*, and manifested pride in their supposed powers ; speaking with delight of their enjoyments at "the Sabbath," and longing to be burned, that they might constantly enjoy "the master's society."

Under the pontificate of Julius II. many thousands of persons were burnt, who confessed freely that in the form of cats they were in the constant habit of destroying children. The witch *mania* may be considered to have first fairly set in in 1488, when Pope Innocent VIII. launched his terrible manifesto against them. In this celebrated bull he called upon all the princes of Europe to assist in extirpating this crime, by means of which all manner of wickedness was wrought. He also appointed inquisitors in every country, armed with little less than apostolic power, to try and punish the accused. Naturally this crusade against a supposed crime propagated it, and wonderfully deepened the belief in the minds of the people. M. Littré on this makes the following striking observations : —

"In this fact, for which during many years the pile was constantly erected, we remark at first one prominent phenomenon, i. e. its *collective character*. All the sorcerers say that they were changed into cats, and this

in spite of the punishment which awaits them ; they accuse themselves of homicides without number. In confirmation, the mothers notice spots of blood on the dead children, the fathers speak of strangely pertinacious cats about the house. To all this tragedy, so well attested on all parts,—sealed by confession, certified by solemn inquisition,—there fails but one thing : *in spite of the assassinations of so many children, the mortality is not increased, nor the district depopulated.*"

In the sixteenth century, the nuns of a certain convent were all seized with a kind of hysterical affection. Naturally they were bewitched, and victims had to be burned before they were cured.

In Lorraine, from 1580 to 1595, about nine hundred persons were burnt on this pretext. They all saw the Devil near them, even whilst the torture was being inflicted, endeavoring, in his way, to comfort them. In Labourd, about the beginning of the seventeenth century, the confessions of the accused are still more remarkable : —

" La plupart parlaient avec une expression passionnée des sensations éprouvées au Sabbat ; ils peignaient en termes licencieux leur enivrement ; beaucoup déclaraient être présentement trop bien habitués à la société du diable pour redouter les tourments d'enfer ; souffrant fort joyeusement qu'on leur fit leur procès, tant elles avaient hâte d'être avec le diable ; elles s'impatientaient de témoigner combien elles désiraient souffrir pour lui, et elles trouvaient fort étrange qu'une chose si agréable fut puni."

It is unnecessary further to multiply instances ; we have said enough to illustrate the eminently *collective* character of these phenomena, — " seizing upon great numbers simultaneously, and subjugating them to the same class of sensations and actions, finally passing away,

and leaving no trace, save the remembrance of their singularity and the difficulty of theorizing upon them." The rapidity with which all traces of these delusions vanished, after a crisis had once occurred, is a constant and remarkable feature. It might almost be said that, after two centuries of delusions, the people went to rest *mad*, and awoke in a few hours *sane*, to wonder what had been the clamor.

We can scarcely persuade ourselves that some of the so-designated "*spiritual*" manifestations of our own times are less absurd or dangerous than those just quoted. In concluding this branch of the subject, one or two general observations suggest themselves, which are both of speculative and practical interest.

1. The immense number of convictions and executions for witchcraft are easily accounted for, when we consider the rules and tests for the detection of the supposed crime. These, it is well known, were so devised as to reflect no discredit on the accuser in case of failure, but to admit no loophole of escape for the accused.

2. In addition to the surprising uniformity of the confessions, there is another evidence of the strength and persistency of the delusion. When the mania for witch-extermination had begun to subside, and men were more anxious to acquit than condemn, there were found numbers who voluntarily accused themselves of crimes evidently not committed, as of the murder of people still living, and of having attended at the "Sabbath" during nights when the strictest watch had been kept upon them, and it was evident they had never quitted their room.

3 (and lastly). The most remarkable consideration of all is this,— and it shows forcibly the inconsequence of the whole business : these people, who could raise tempests, who partook of the power of the Prince of Dark-

ness, who could work their will amongst the elements, — *they* had neither riches nor power nor grandeur ; they, who could change their form at pleasure, could ride through the air, and pass through keyholes and crevices, and up chimneys at will, — these very people could not preserve themselves from a painful and ignominious death !

The epidemics of the sixteenth, seventeenth, and eighteenth centuries we can but name in passing. The sixteenth was eminently *reformative*, and never, not even in the sixth and seventh centuries, did polemic rage burn more hotly than during this period : the specific fanaticism was that of the Anabaptists, who, under the pretext of zeal, kept Europe in an uproar.

The seventeenth century in England and the eighteenth in France present striking analogies to each other in their broad features of resistance to authority. In each case the entire national mind, in all its manifestations, thought, expression, emotion, and action, was disturbed to the very foundation. In each there was a period of luxuriant literature, followed by deep thought amongst the masses. In each, prolonged thought excited emotion ; and this in its turn produced action, reaction, violence, anarchy, *despotism*. In each case, after peace was restored, there was another phase of literature, remarkable for its *immorality*.<sup>5</sup> The eighteenth century also produced two of the most frantic commercial manias that the world has ever witnessed, — in France, Law's Bank and Mississippi scheme ; in England, the South Sea scheme. It is impossible even to glance at the nature of these projects, or to describe the excitement caused by their rise and progress, the desperation and ruin consequent upon their failure. They were instituted in the same year, — the two nations went mad simultaneously ; and in the same year (1721) both broke down,

reducing thousands of families to beggary. Each gave rise to innumerable other bubbles, none of which were too absurd to be adopted. At one time, eighty-six of these undertakings were declared illegal by the Committee of the House of Commons, and abolished accordingly. No. 17 in this list will serve as a fair sample of the credulity of the period. It was entitled "A company for carrying on an undertaking of great advantage, *but nobody to know what it is!*" The projector of this cleared £2,000 in five hours, and decamped.

When remarking upon the mental aberrations of our own century, the nineteenth, M. Emile Montegut observes :—

"Ils n'ont plus le fanatisme révolutionnaire de leurs pères, et ce n'est pas eux qui demanderaient, à étrangler le dernier roi avec les entrailles du dernier prêtre!"

True, — and fortunate as true, — our tendencies are not so rabid ; yet we take our part bravely in the insanities of our race. There are few of the manias which have been already noticed that have not their representatives in the present age. Penance, mortifications, and dancing, — panic-terror, witchcraft, and commercial speculation run wild, — a revolutionary madness pervading an entire continent, — we seem to be taking a *résumé* of the world's follies and crimes. But one morbid tendency stands out in bold relief from the rest, — that of spiritualistic fanaticism, as set forth by Jumpers, Shakers, Apostle-baptists, Socialists, Mormons, Spirit-rappers, and a crowd of other sects, each claiming exclusive possession of the truth. Each one might well require a volume to relate their history and doings. We will but briefly notice two, which are remarkable for the strange social and civil effects produced by them upon our transatlantic brethren.

Joseph Smith, the inventor of Mormonism, which has

now its tens of thousands of votaries encamped in the valley of the Salt Lake, was a man from amongst the lowest of the people. His character is naïvely described by M. Montegut as not possessing precisely the innocence of a virgin. According to the same authority, he was of licentious manners, an audacious liar, a bankrupt, an adulterer, a murderer. The following passage would lose by translation, and affords matter for profound thought :—

“ Eh quoi ! peut dire un sceptique, voilà un homme notoirement connu pour le dernier des mécréans et des coquins ; un homme d'une éducation vicieuse, d'une intelligence médiocre, d'une âme rapace, et grossièrement sensuelle ; un homme qui se recommande simplement par un appetit solide, un front d'airain, des doigts crochus et agiles : cet homme réussit, non pas à voler une compagnie d'actionnaires, ou à inventer un moyen subtil d'ouvrir les serrures, mais à fonder une religion, et à entraîner sur ses pas de grandes multitudes qui révèrent son nom ! Il publie une fausse Bible, on l'accepte pour vraie : il se donne pour le prophète de Dieu, et il le fait croire sans trop de difficulté ; il établit des dogmes qui blessent tous les sentiments de liberté des Américains, et il trouve des Américains pour accepter ses dogmes ; il proclame la déchéance de la femme dans un pays où elle est plus véritablement souveraine que dans aucune contrée de l'Europe, et il se rencontre des femmes pour venir se remettre entre ses mains ! ”

Add to this, that, professing to live in such sanctity and close communion with God as to be able to raise the dead, his life was one of the most open profligacy, with details too sickening to mention, and that his followers are numbered by myriads, — and we have a sufficiently curious yet melancholy example of the credulity of large masses. The religion professed is eminently *eclectic* ;

each previous one contributing that part which is most acceptable to the appetites and passions of man. We cannot enter further into detail ; sufficient has been said to vindicate the *collective* character of this delusion.

The next epidemic which we have to notice is still more extraordinary in its psychological relations, and forms an appropriate climax to this part of our sketch.

The Spirit Faith in America is computed to embrace two millions of believers, and hundreds of thousands in other lands, with twenty thousand mediums. It appears that these include men in all ranks of society, from the highest to the lowest. Many of the facts related imperatively demand that we should consider this as a *delusion*, not altogether an *imposture*, especially the consideration of the number who have gone insane on the subject. It is said that amongst the lunatics confined in public asylums in the United States, there are 7,520 who have become such entirely owing to this "spirit faith." The spiritualist has no *fixed* creed, but finds his "articles" as he advances. The fundamental belief is in their communication with disembodied spirits through the means of *mediums*, — persons who are sensible of the presence of these spirits, and can learn and interpret their will. There are "rapping mediums," whose mode of action is sufficiently well known ; there are the "writing mediums," who in a kind of cataleptic trance write down the communications of the spirits. There are also the "speaking mediums." On these last M. Littré has the following remarks : —

"Ceux-ci sont des véritables pythonesses ; d'une voix souvent différente de la leur, ils prononcent des paroles qui leur sont inspirées, ou qui sont mises directement dans leur bouche. Cette passivité a été notée chez les convulsionnaires. Plusieurs parlaient comme si les lèvres, la langue, tous les organes de la prononciation eussent été

remués et mis en action par une force étrangère ; dans l'abondance de leur éloquence, ils leur semblaient qu'ils débitaient des idées qui ne leur appartenaient aucunement, et dont ils n'acquéraient la connaissance qu'au moment où leurs oreilles étaient frappées par le son des mots. Une des prophétes disait, et ce qu'elle déclarait s'appliquait à des milliers d'autres — ‘ Je sens que l'esprit divin forme dans ma bouche les paroles qu'il me veut faire prononcer. Pendant que je parle, mon esprit fait attention à ce que ma bouche prononce, comme si c'était un discours récité par un autre.’ ”

Interpreted by these three orders of *media*, the spirits give information on all subjects upon which they are consulted, — religious, social, political, or medical. They relate past events, interpret present ones, and prophesy the future. It would appear, however, that the spirits have not all the wisdom popularly attributed to “ghosts,” for they make frequent mistakes both as to past and present, whilst their knowledge of the future is dealt out economically and oracularly. Their religious instructions are involved in a vague mysticism ; and their social, domestic, and political directions would, if followed, often lead to remediless confusion. It is, nevertheless, a thriving trade, for the revelations of the invisible world are made a matter of merchandise, and as publicly advertised as any other quack medicine.

These phenomena are closely allied, on the one hand, with those of trance and hysteria, and on the other with those of witchcraft and demoniacal possession, of the prophecies of Cevennes, the “preachings” of Sweden, the Apostle-baptists of Germany, the Convulsionnaries of St. Médard.

M. Littré suggests an ingenious theory of their *somatic* origin, which we shall endeavor to condense. He entirely disbelieves, in the outset, in their spiritual origin,

— first, from the smallness and absurdity of the results produced ; secondly, because all the manifestations are such as, in a *sporadic* form, are well known and recognized as the normal symptoms of certain pathological conditions of the nervous centres.

These phenomena are all resolvable into disorders of the senses, muscular actions, and intelligence ; and M. Littré shows first how these may all be affected by well-known physical agents, producing certain definite physiological results. Thus illusions of the eye may be produced by belladonna,—those of the ear by large doses of quinine. The muscular system may be convulsively affected by the administration of strychnine, whilst a general modification (or even aberration) of the intelligence and the emotions is producible at will by the use of opium, hachisch, and other narcotics.

These results are all physical, they are likewise all special, definite, and constant. Whence it may be considered as ascertained,—

(1) *That a certain physiological (or pathological) condition of the nervous centres is connected with illusions.*

But (2) it is well known that whatever subjective sensations may be produced by *external* agency may also be produced by *internal* changes, i. e. changes in the organs themselves. Thus, from congestion and other causes, the eye may perceive light, the ear may perceive sound, without those being actually present ; and so with the other senses. Under similar circumstances, the intelligence is troubled, creates strange associations of ideas, sees visions, and appears abstracted from a real world to live in an imaginary one. Here we have the same condition as that referred to above, produced spontaneously, — yet the source is somatic or physical.

And again (3) we know that certain pathological conditions have a tendency to become epidemic, influenced

by causes not yet investigated, as glandular, bronchial, and gastric inflammation or irritation, in time of plague, influenza, or cholera ; and it is not unreasonable to conjecture that the morbid change in the nervous centres, which we see in *individual* cases producing such visionary results, may also become epidemic, and produce these aggregate delusions.

On reviewing the foregoing details, we see how strong is the tendency of opinion once promulgated to run into an epidemic form, — no opinion, no delusion, is too absurd to assume this collective character. We observe also how remarkably the same ideas reproduce themselves, and reappear in successive ages. We have now to examine those cases in which *individual* crime operates upon masses of people to produce great numbers of imitations. We shall see that no crime is too horrible to become popular, — homicide, infanticide, suicide, poisoning, or any other diabolical human conception.

Crime of various kinds appears to be *endemic* in certain countries, and even to be incorporated in the forms of religion peculiar to them. Assassination was one of the principal *observances* among the subjects of the Old Man of the Mountain, — a sect which lasted nearly two centuries, and carried dismay and terror into every court in Europe. Infanticide is a part of the religion of the Hindoos. It is stated in Buchanan's "Researches in Asia," that the number of infants killed in one year in the two provinces of Cutch and Guzerat was thirty thousand. It is also endemic in China ; the number of children exposed in Pekin alone is about nine thousand annually. It is much the same in the South Sea Islands, the Sandwich Islands, and Ceylon. Suicide appears to be endemic in Hindostan ; many hundreds lay violent hands on themselves each year, — three fourths being women. Robbery is endemic in Italy ;

incendiaryism and murder, we regret to think, in Ireland. But though these seem to be the favored *habitats* of the special crimes mentioned, yet *everywhere* are the seeds of evil sown deep under the surface of society, deep in the corrupt moral nature of man, and their development is like those curious phenomena so familiar to the observer of animal life in its most elementary forms ; where it only is required that the proper *nidus* should be prepared, and countless millions of living creatures crowd in, or originate from it, propagating themselves with ever-geometrically increasing rapidity ; — the germ ever present, — the *conditions* casually supplied.

So let the surface of society be disturbed, or its depths ploughed up by influences of exceptional social, commercial, or political events, as in times of speculation, panic, or war, then inevitably will these seeds of evil works germinate, and their results will be offences against order, property, and life, which for their check will often require enactments as stern and unsparing as the fiat by which the thistle and the poppy are eradicated from our cornfields. In epidemics of plague, cholera, or influenza, we can trace those conditions of public hygiene which are calculated to favor or retard their development ; but the *cause* of the rapid spread at that particular period remains a mystery. We believe that the causes of the spread of crime are *more* amenable to investigation than these ; that the initiative propensity, so closely bound up with the constitution of man, his impulses, weaknesses, and vices, taken in combination with the special, social, or political conditions of any given time, are amply sufficient to account for our natural principles, and to reduce to some sort of law these striking *collective* moral aberrations. We proceed to give a few illustrations of these aggregates of crime, with a view to an inquiry into the causes concerned in their

production : (1) as to crime against property, (2) against person and life.

Mr. Macaulay gives a very graphic picture of an epidemic of housebreaking and robbery, in the fourth volume of his recent History. After alluding to the scarcity of grain, he says : —

“ A symptom of public distress much more alarming was the increase of crime. During the autumn of 1692 and the following winter, the capital was kept in constant terror by housebreakers.”

Attempts were made on the mansion of the Duke of Ormond and the Palace at Lambeth.

“ From Bow to Hyde Park, from Thames Street to Bloomsbury, there was no parish in which some quiet dwelling had not been sacked by burglars. Meanwhile the great roads were made almost impassable by free-booters, who formed themselves into troops larger than had ever been seen. The Oxford stage-coach was pillaged in broad day, after a bloody fight. A wagon laden with £15,000 of public money was stopped and ransacked. The Portsmouth mail was robbed twice in one week, by men well armed and mounted. Some jovial Essex squires, while riding after a hare, were themselves chased and run down by nine hunters of a different sort, and were heartily glad to find themselves at home again, though with empty pockets.”

It seems that these robbers were by some suspected of being Jacobites ; but they showed the most laudable impartiality in the exercise of their calling. The gang, consisting of not less than eighty names, were ultimately betrayed by the confession of one of their fraternity.

Another form of crime against property is that of Incendiaryism. History abounds with instances of this offence. We shall but mention two cases, which will illustrate the mode in which the propensity is propagated.

M. Marc, in his "Annales d'Hygiène Publique," relates some particulars of a band of incendiaries, who in 1830 (the date is significant) desolated many departments of France. A girl, about seventeen years of age, was arrested on suspicion of being connected with them. She confessed that "twice she had set fire to dwellings by instinct, by *irresistible necessity*, — a victim to the suggestions to which she was exposed by the constant reports of fires, and the alarms from these scenes, which terrified the whole country and excited her diseased brain." A boy, about eighteen, committed many acts of this nature. He was not moved by any passion ; but the bursting out of the flames excited a profoundly pleasing emotion, which was augmented by the sound of the alarm-bells, the lamentations, clamors, and disorders of the people. "Dès que le son des cloches annonçait l'explosion de l'incendie, il était forcé de quitter son travail, tant son corps et son esprit étaient violemment agités."

In all this we find nothing mysterious, though the epidemic is strongly developed. A time of political excitement and change (1830), — men's minds agitated, — revenge for real or supposed injuries influencing the few, — imitation and impulse inducing the many to follow, — hysterical girls, — excitable and idle boys (for most of the band were young), — we have here a sufficient number of elements well known to exist, and ready to burst forth into crime when the example is once set, and quite capable of themselves producing the entire phenomenon.

In De Quincey's curious and brilliant paper entitled "Murder considerd as one of the Fine Arts," he observes, with regard to this class of crime, that "it never rains but it pours," and gives some singular illustrations of its tendency to occur in groups. He mentions that in the comparatively short time intervening between 1588 and 1635, seven murders or assassinations of the most

distinguished characters of the time occurred. The first was that of William I. of Orange ; then Henry Duke of Guise ; next to him Henry III., the last of the Valois princes ; next Henry IV., the first of the Bourbon dynasty. Then followed the murder of the Duke of Buckingham, of Gustavus Adolphus, and lastly of Wallenstein. It is not often in the history of man that such a constellation of crime is met with ; yet epidemics numerically more formidable are constantly presenting themselves. One murder of great atrocity is constantly and (as it would appear) inevitably followed by others vying with it in horror. Sometimes, also, a predominant delusion affecting large numbers gives rise to many examples of the same crime. Thus, in Denmark, in the middle of the last century, a great number of people were affected with the morbid notion, that by committing premeditated murder, and being afterwards condemned to die, they would, by public marks of repentance and conversion on their way to the scaffold, be better prepared for heaven. The murders were generally committed on children.

As it was evident that capital punishment would not stop this epidemic, it was ordered that the delinquents should be branded on the forehead, confined for life to hard labor, and annually whipped publicly. A midwife in Paris for some time was in the habit of introducing an acupuncture needle into the brains of new-born children, that they might people heaven.

Esquirol relates a curious case of homicidal monomania, which created much excitement. He was within a short time called in to many others, all of whom traced the tendency to this original case :—

“ Un monsieur lit un journal dans lequel sont rapportés les détails du meurtre d'un enfant ; la nuit suivante, il est éveillé en sursaut avec le désir de tuer sa femme. Une femme coupe la tête à un enfant qu'elle connaissait à

peine, est traduite en jugement ; ce procès a beaucoup de retentissement, et produit par imitation un grand nombre de monomanies homicides."

The acquittal of Oxford for shooting at the Queen was quickly followed by the attempt of Francis to imitate him. The case of Laurence, who in 1844 killed an inspector of police, was immediately followed by that of Touchett, who, without motive, save that of imitation, shot a stranger at the shooting-gallery. A similar instance of succession, with its causes, is alluded to in the following paragraph :—

" It is known that Mallard, the pawnbroker from whom Wix purchased the pistol with which he shot Bostock, his master, was the shopkeeper from whom Graham subsequently bought the pistol with which he shot the stranger, Blewitt. This fact, sufficiently striking of itself, is made more remarkable by the pawnbroker's evidence, which tends to prove that what looks like a mere coincidence was, in fact, but the operation of a moral law, and that where the appearance was an accident, the reality was a principle. '*Immediately,' says the pawnbroker, 'after the assassination by Wix, I received a great many applications for pistols, and now, within the last few days'* (after the second tragedy), '*several persons have applied to me for the same thing.* I am now determined, however, never to sell another.' Passing by the very proper resolve adopted by this tradesman of mishaps, we find in the fact he records a startling revelation of the mental condition of a portion of that public authors and orators are so fond of bepraising. To many of our London denizens there would appear to exist a fascination about the circumstance of murder. About us and near us, arrayed in all the externals of common sense and charity, are persons endued with a mesmeric sensitiveness to the horrors of homicide, from the very intensity of whose abhorrence

of crime arises an interest for it, tempting and fascinating them to its commission.”<sup>6</sup>

The homicidal horrors of the French Revolution partook strongly of the nature of an epidemic. Here everything co-operated to propagate the slaughterous tendency : times when political changes were almost of daily occurrence ; distress amongst the people ; gradual loss of respect for human life in general ; self-defence, terror, emulation, morbid imitation, mere sanguinary impulse ; — all were in operation to produce scenes such as man had never before witnessed.

It is interesting to trace in these cases the effect of any physical agent, however unable we may be to comprehend its *modus operandi*. Esquirol says : “ Lorsque le terrible klamsin souffle, l’ Indien, armé du fer homicide, se précipite sur tout ce qu’il rencontre.” Similar to this is the “running amuck” of the Malay, when drunk with bang, hachisch, or enthusiasm.

In general, when unconnected with national interests, the mere homicidal epidemic must, for obvious reasons, be comparatively limited in its extent. There are other forms, however, not less criminal, where the same restrictive causes are not in operation : the only one we shall at present notice is the crime of duelling. In the year 1528 Francis I. sent a cartel to the Emperor Charles V., and from this time the duel became a fashionable vice, — very shortly after amounting to an epidemic. In the reign of Henry IV. of France about 5,000 were killed in ten years in single combat, and 14,000 others were similarly engaged. All France went mad upon the duel. Kings, popes, and bishops in vain fulminated against it. “At last,” says Lord Herbert, the English ambassador, “there was scarcely a Frenchman deemed worth looking at who had not slain his man.”

Infanticide has a strong tendency to become epidemic,

of which we will mention one instance only. In one of the departments of France, about the close of the last century, a girl killed her illegitimate child. The case created much excitement and interest, as there had not been a crime for very many years of that nature. Within twelve months, eleven others occurred in the same department, very similar in details.

No individual crime seems to have so strong a tendency to spread by example and imitation as *Suicide*.

"L'apparition épidémique du suicide," says M. Esquivrol, "est un phénomène bien singulier. Dépend-elle d'une disposition cachée de l'atmosphère, de l'imitation qui le propage, de circonstances politiques qui bouleversent un pays, ou de quelque idée dominante favorable au suicide ? Il est certain que cette apparition subite et passagère, mais en quelque sorte épidémique, appartient à des causes différentes."

Mr. Lecky, in his recent "History of European Morals," notices that "epidemics of purely insane suicide have also not unfrequently occurred. . . . In that strange mania which raged in the Neapolitan districts from the end of the fifteenth to the end of the seventeenth century, and which was attributed to the bite of the tarantula, the patients thronged in multitudes towards the sea, and often, as the blue waters opened to their view, they chanted a wild hymn of welcome, and rushed with passion into the waves."

In the time of the Ptolemies, a Stoic philosopher preached so earnestly and eloquently contempt of life and the blessings of death, that suicide became very frequent. His name was Hegesias, surnamed "the Orator of Death." On this the writer just quoted remarks: "A conspicuous member of that Cyrenaic school, which esteemed the pursuit of pleasure the sole end of a rational being, he taught that life was so full of cares, and

its pleasure so fleeting and so alloyed, that the happiest lot for man was death ; and such was the power of his eloquence, so intense was the fascination he cast around the tomb, that his disciples embraced with rapture the consequence of his doctrine ; multitudes freed themselves by suicide from the troubles of the world ; and the contagion was so great, that Ptolemy, it is said, was compelled to banish the philosopher from Alexandria."

Some of the illustrations which follow are extracted from Dr. Winslow's "Anatomy of Suicide," and also from M. Esquirol's essay on Suicide in the "Dict. des Sciences Médicales."

The ladies of Miletus committed suicide in great numbers, because their husbands and lovers were detained by the wars ! At one time there was an epidemic of drowning amongst the women of Lyons,—they could assign no cause for this singular tendency ; it was checked by the order that all who drowned themselves should be publicly exposed in the market-place. That at Miletus was stopped by a similar device. The ladies chiefly hung themselves, and the magistrate ordered that in every future case the body should be dragged through the town by the rope employed for the purpose, and naked. An ancient historian of Marseilles records that the girls of that city got at one time the habit of killing themselves when their lovers were inconstant !

The following passage is extracted from the "Anatomy of Suicide" :—

"Sydenham informs us, that at Mansfield, in a particular year, in the month of June, suicide prevailed to an alarming degree, from a cause wholly unaccountable. The same thing happened at Rouen in 1806 ; at Stuttgart, in 1811 ; and in the Valois in the year 1813. One of the most remarkable epidemics of the kind was that which prevailed at Versailles in the year 1793. The

number of suicides within the year was 1,300, — a number out of all proportion to the population of the town."

Suicide not unfrequently accompanies epidemics of a bodily disease, such as pellagra. It is said that one third of the victims of this affection commit suicide. Nostalgia is also a very frequent cause of this crime.

Closely connected with this subject is that of self-mutilation, a singular instance of which is here subjoined : —

"In the month of February, 1844, 350 men of the 3d battalion of the 1st Regiment of the Foreign Legion were encamped at Sidi-bel Abbés, in the province of Oran. A soldier mutilated himself by a blow upon his wrist with the lock of his gun. Thirteen others inflicted a similar injury upon themselves within twenty days. None of these men would admit that the mutilations were voluntary, but all affirmed that they arose from pure accident while cleaning their arms. It was not possible, in a single case, to discover a plausible motive to explain so strange a circumstance. The commanding officer, alarmed at this singular epidemic, and supposing it might extend, removed the camp some seven or eight leagues, to a place occupied by the 10th battalion of Chasseurs of Vincennes, commanded by M. Boëte. The astonishment of the officer commanding the Foreign Legion was great when M. Boëte informed him that eight of his men had mutilated themselves in the same way, and nearly at the same time. The commanding officer and the surgeon both affirm that there was no communication between the two camps. But even supposing that a communication had existed, it only affords another example of the force of imitation."

We have deferred till the close of our list of the vices and crimes which disfigure humanity epidemically, that of Poisoning, partly because of its close connection with the aspect of the present time, and partly because from

its secret nature, the facilities which are afforded for its commission, and the difficulties in the way of its detection, it appears to us to exercise a more fearfully demoralizing influence upon society than any of those already noticed, dreadful as is the aspect of many of them.

"Early in the sixteenth century," says Mackay,<sup>8</sup> "this crime seems to have gradually increased, till in the seventeenth it spread over Europe like a pestilence." An attentive consideration of the facts will show that this rapid spread quite naturally resulted from the well-known causes in operation,—evil passions originating the crime, which then became popular, by temporary impunity, by impulse, by imitation, and *by the publication of details, leading the public mind to dwell upon the subject*, and gradually inducing a familiarity with the crime, and a proportionate contempt for human life. Many of these influences are even now rife, and the result is the harvest of crime which is constantly thickening around us; yet surely some useful lesson may be learnt by the accumulation of the experience of past ages.

Sporadic cases of poisoning occur very far back in history; but the first epidemic which we meet with is in Italy in the seventeenth century. Lebret, in his "Magazin zum gebrauche der Staaten Kirche Geschichte," relates that in 1659 Alexander VII. was informed by many of the clergy that a number of young women had confessed to having poisoned their husbands, for various motives; no names were mentioned, but the authorities were directed to look out for these events. This caution resulted in the discovery of a society of young wives, who met nightly at the dwelling of an old woman called La Spara; and their business was to arrange the details of their poisonings. La Spara and four others were hanged; thirty were publicly whipped through the streets, and a great number were banished. Shortly

afterwards nine others were hanged, "and many more, including young and beautiful girls" (Mackay), were whipped half naked through the streets of Rome. To these succeeded the notorious Tophania, the inventor of the "Aqua Toffana," now generally supposed to have been a solution of some neutral arsenical salt. This wretched creature carried on her horrible trade for above fifty years, selling poison to those who could afford to buy; but such was her sympathy, says Lebret, with those who were tired of their husbands, that she freely gave it to them, if they could not afford to pay. She was ultimately detected and strangled, after having confessed her crimes and her employers. The succeeding punishments for the time checked the mania.

About the same time, or a little after, a similar epidemic appeared in France. Between 1670 and 1680 Madame de Sévigné feared that Frenchman and poisoner would become synonymous, so frequent was the crime. The horrible series of murders perpetrated by Madame de Brinvilliers may be passed over as being well known: but it is especially interesting to trace their effects upon the public mind. We quote again from Mr. Mackay:—

"During the trial all Paris was in commotion. La Brinvilliers was the only subject of conversation. *All the details of her crimes were published, and greedily devoured; and the idea of secret poisoning was first put into the heads of hundreds who afterwards became guilty of it.* It was now (i. e. after her execution and confession) that the mania for poisoning began to take hold on the popular mind. From this time to 1682 the prisons of France teemed with persons accused of this crime."

The criminals were detected ultimately, and many burned or hanged in 1679; but "for two years longer the crime continued to rage, and was not finally suppressed till the stake had blazed or the noose dangled for upwards of a hundred individuals."

Hitherto we have had in England no such fearful epidemic as these, but are we not even now exposed to the droppings before the tempest? Do we not hear the growling of the thunder before the storm breaks in all its fury?

In the year 1845, a year memorable in our annals, the case of Tawell the Quaker, which is too well known to need recapitulation, excited much interest, and was the topic of almost exclusive comment for some time, even in those days of commercial madness. Poisoning was brought prominently before the public; and the mere accident by which detection was brought about suggested to many minds the facility with which such crime could be accomplished, and *perhaps* escape detection. Whoever will take the trouble to examine the "Annual Registers" since that period, will find almost constant reference to the great increase of poisoning in Great Britain. Public indignation was greatly excited a few years ago at the revelations made concerning the burial-clubs: the number of the children that fell victims at this time is not to be ascertained, but was certainly great; and "we remember," says a vigorous writer in the *Express* of March 14, 1856,—

"The sudden revelation of poisoning practices among the neglected poor in certain agricultural counties, where mothers had been taught, by the operation of the Corn Laws, to believe that the most loving office they could fulfil towards their children was to send them early from the pains of life to be 'better off with the Lord.' None of us are likely to forget that one very poor woman avowed, without any sense of guilt or shame, that she had thus dismissed to ease and plenty eight infants in succession by putting arsenic on her breasts."

We in 1856 seem threatened with the storm, of which these were but the preliminary drops; the crime of poi-

sioning is brought prominently before us, it fills men's minds, and illustrations of it crowd our daily and weekly papers. But we will not add to the wrong that we believe is thus done; we refrain from all details and comments.

The cumulative portion of our task is ended. To exhibit mind in its *contagious* aspect, we have passed in review not only those conditions of aberration which from their transitory nature may most strictly be considered as epidemics, but also those which, having risen from small beginnings, have spread rapidly, and ultimately exercised a permanent influence upon the race. We have seen that in all its manifestations, Thought, Emotion, Expression, and Action, mind has a powerful action upon mind. The individual error or crime acts upon the mass by suggestion, — the mass reacts upon the individual by intensifying every development of emotion. The tension of thought, which at first leads to any delusion, may be but slight; but when it takes hold upon numbers, each individual is affected by the combined force of these numbers. It is like the addition of plates to a galvanic battery, and the effect is almost like it, numerically proportionate. The man who timidly enunciates an opinion so long as it is but his own, will die in its defence when strengthened by the moral force of thousands. And this staunch adherence to any given view is quite independent of whether it may be right or wrong, important or otherwise. Nothing can more strongly illustrate this position than the persistency with which, when the witch-mania was fairly established, the victims of this delusion persisted in dying in support of their belief.

Our catalogue of error, folly, fanaticism, and crime has been a long one; yet we have selected but a very small number from those with which all history abounds, — may we not say, of which almost all history consists?

This would, however, be a profitless enumeration, if we could not deduce some general principle, as indicative of the causes of all the singular phenomena passed in review.

Granting the corrupt nature of man to be the primary source of all crime, we cannot fail to see that its development is favored and fostered by the predominance of appetite and instinct over volition,—of imagination and impulse over reason and judgment. And what is this but the permanence of an *infantile* condition of mind? Children have appetites and instincts strong,—reason undeveloped,—passion unregulated. A proper system of education (strictly so called) has a tendency to substitute reason for instinct, to develop the former, to hold in check the latter. If this be neglected, or if it be misdirected, man will grow up a child in all but its innocence and its inability to do evil,—his appetites, impulses, and passions are strengthened by indulgence and lack of any restraining influence, his reason and judgment are null from disuse. In this state (and of how vast a majority of our fellow-creatures is this the condition !) he is an easy prey to any class of ideas or emotions which may be presented to him,—he receives them, adopts them, and imitates them, because he cannot analyze them,—because they, perhaps, tend to the indulgence of the desire of the eye, or the lust of the flesh,—because they flatter his pride,—but most chiefly because uncultivated and uneducated man is *essentially mimetic*. Of the influence of morbid imitation in producing crime many instances have already been given. Dr. Winslow, in his "Anatomy of Suicide," relates the following:—

"A criminal was executed not many years ago, in Paris, for murder. A few weeks after, another murder was perpetrated; and when the young man was asked to assign a reason for taking away the life of a fellow-crea-

ture, he replied, that he was not instigated by any feeling of malice, but, *after having witnessed the execution*, he felt a desire, over which he had no control, to commit a similar crime, and had no rest until he had gratified his feelings."

A similar instance occurred recently in one of our Northern counties, where the only reason which the murderer could give for cutting off the head of a child was, that W—— (mentioning the name of another notorious criminal) had done so before him. The following remarkable instance is also from Dr. Winslow's "Anatomy of Suicide":—

"Some years ago, a man hung himself on the threshold of one of the doors of the corridor at the Hôtel des Invalides. No suicide had occurred in the establishment for two years previously; but in the succeeding fortnight, *five invalids hung themselves on the same cross-bar*, and the governor was obliged to shut up the passage."

It is needless further to multiply examples; the imitative instinct is perhaps the most powerful in our nature; and

"It is in homicidal mania that we look for the most striking illustrations of this mysterious form of cerebral disease. The instances on record of the dreadful exercise of this perverted instinct, under circumstances the most peculiar and afflicting, are numerous and well authenticated, and the law is now well established among cerebral physiologists, that to persons thus diseased, the latent impulse — the lurking demon — is often forced into resistless action by the influence of a striking or notorious example. One startling and celebrated murder is the sure herald of several. The notoriety attracts to a congenial crime the diseased minds of thousands; a morbid sympathy is created; there is fascination in the gulf; the diseased propensity is stimulated, excited,

and made to overwhelm both volition and reason. The last agency wanted is supplied to make the madness culminate.”<sup>9</sup>

Love of notoriety is a strong incentive to crime.

“The man who was killed by attaching himself to a rocket, and he who threw himself into the crater of Mount Vesuvius, were no doubt stimulated by a desire for posthumous fame. Shortly after the suicide at the Monument, a boy made an unsuccessful attempt to poison himself; and on being questioned as to his motives, he said, ‘I wished to be talked about, like the woman who killed herself at the Monument!’”

Another powerful instinct is that of *impulse*. By this we mean an apparently irresistible tendency to the commission of a certain act, without motive, without any knowledge of the cause, but that the necessity to perpetrate it is most urgent.

A very striking instance of this is mentioned by Esquirol. A young girl of unexceptionable morals and character, of mild and amiable deportment, acting as a nurse, one day met her mistress coming in from a walk, and requested to be dismissed the house. On being questioned as to her reasons, she said that every time she undressed the child, the temptation to kill it was almost irresistible, apparently stimulated by the sight of its white skin. This seems to ally this class of phenomena to those animal instincts and passions which are aroused by the sight of bright colors, as scarlet to the bull, &c.

The well-known case of Henriette Cornier, related by M. Marc, was of a similar nature, with this exception, that she accomplished her purpose, the impulse having proved too strong for her to overcome; the child was one to which she had always professed and felt extreme attachment.

All writers on the psychological relations of crime recognize that, in an otherwise sound mind, this strong and occasionally irresistible tendency may suddenly occur, and depart again as soon as gratified, leaving the intelligence and the moral disposition in every respect unaffected. Instances of it occur very frequently after the public mind has dwelt for some time upon any given crime ; yet it is altogether different in nature from the tendency to imitation, before noticed. Many of the subjects of it have sufficient warning given to enable them to request to be restrained, or that the objects of their maniacal fury may be removed.

“ Une jeune dame qui s’était retirée dans une maison de santé, éprouvait des désirs homicides dont elle ne pouvait indiquer les motifs. Elle ne déraisonnait sur aucun point, et chaque fois qu’elle sentait cette funeste propension se produire et s’exalter, elle versait des larmes, suppliait qu’on lui mit la camisole de force, qu’elle gardait patiemment jusqu’à ce que l’accès, qui durait quelquefois plusieurs jours, fut passé.” (Marc.)

Without adducing further illustrations, we see plainly that a great proportion of mankind are, so far as their reason and intelligence are concerned, in the condition of *children*, — governed by instinct, appetite, and passion, — uncontrolled by conscience and judgment, — ready for any impression, prepared to tread any path marked out which leads to any indulgence, bodily or mental. The remedy for this is plain, palpable, and on the surface, — difficult in detail, but ultimately practicable, — a sound form of EDUCATION, secular and religious. *Education*, we say, — not *Instruction* ! — nothing is more dangerous than knowledge to the mind without the capacity to make a proper use of it ; then, indeed, it does but afford an additional facility for the commission of crime. It is through not carefully dis-

tinguishing between instruction and that sound education which should consist in the literal *educing* of the faculties of the mind, as a counteracting agency to the instincts, that Sir A. Alison has adopted his singular and almost paradoxical notions on the direct ratio between education and the increase of crime, as set forth in the following passage, and also in the introductory chapter to his recent History, at greater length : —

“ Philanthropists anticipated, from this immense spread of elementary education, a vast diminution of crime, proceeding on the adage, so flattering to the pride of intellect, that ignorance is the parent of vice. Judging from the results which have taken place in Prussia, where instruction has been pushed to so great a length, this is very far indeed from being the case. On the contrary, though one of the most highly educated countries in Europe, it is at the same time one of the most criminal. On an average of three years, from 1st January, 1824, to 1st January, 1827, in Prussia, where the proportion of persons at school to the entire population was 1 in 7, the proportion of crime to the inhabitants was *twelve times* greater than in France, where it was 1 in 23. This startling fact coincides closely with what has been experienced in France itself, where the proportion of conviction to the inhabitants is 1 to 7,285 ; and it has been found that, without one single exception in the whole eighty-four departments, the amount of crime is in the *inverse ratio* of the number of persons receiving instruction.”<sup>10</sup>

That a State-engine such as that of Prussia, little better than an instruction-mill, should produce results like these, is not surprising ; but all the statistics of our own country, when *properly analyzed*, show that crime and true education are perpetually in an inverse ratio ; and we have the concurrent testimony of writers both

upon psychology and crime, that it is chiefly defective or *perverted* education which is the source of mental aberration on the one hand, and of crime on the other. Mr. Hill, in his work on "Crime," places bad training and ignorance at the *head* of his causes of crime. He says:—

"The great majority of those (criminals) that have come under my observation have been found to have been either greatly neglected in childhood, and to be grossly ignorant, or at least to possess merely a *quantity* of *parrot-like and undigested knowledge*, of little real value."

And again:—

"By direct education I need scarcely say that I do not mean the mere capability of reading and writing, but a systematic development of the different powers of the mind and body, the fostering of good feelings, the cultivation of good principles, and a regular training in good habits."

For much valuable information on this subject, we refer our readers to Mr. Hill's very excellent work on "Crime," Chapter III.

An education which merely instructs will *encourage crime*; one which co-ordinates the faculties of the mind, which gives exercise to reason and judgment, at the same time that it represses *without ignoring* the instinctive part of man's nature, will elevate his position in the scale of creation, and turn those faculties to the service of his fellow-creatures which otherwise would be employed to their destruction. If the emotions be constantly trampled down, and *invariably* subordinated to reason, they will in time assert their claims, and break forth in *insanity* or crime; if they be constantly indulged, the result will probably be the same. It is not by directing attention especially to them, but by elevating those tendencies of

the mind which counterbalance them, that man will be brought nearer to the fulfilment of his high destiny, and his moral constitution be rendered less liable to those epidemics of folly and crime upon which we have been commenting.

Deeply as these considerations affect the individual and societies, there are others which as closely involve the interests of the race; and these are so well and forcibly set forth by a recent writer in the *Express*, that we make no apology for quoting at length from his very philosophic article :—

“There is always something startling in a rapid succession of cases of the same kind of calamity or crime; and the witnesses of such a disclosure are apt to forget, in the strength of their emotions, that the experience of all ages should save us, on such occasions, from astonishment and dismay. Not only is there always a tendency in the criminal world, as in other worlds, to *modes* (to fashions based on sympathy and imitation), but there is a deeper cause for the existence of modes of suffering and of crime. . . . It is a fact which has employed the pens of some thoughtful physicians and moralists, that changes in bodily functions and even structure attend on changes in civilization, and that every important discovery in science is followed by new and strange human phenomena, individual and social. Very curious details may be found in medical literature on the subject of the varying physiological conditions which have attended the different periods of our civilization. We have never met with a medical man who could or would say how it was that the women in Queen Elizabeth’s time,—the ladies of her court, for instance,—could live as they did, and keep their health and attain old age. . . . The alimentary apparatus, with all that it involved, was then the strong and the weak point; and the nervous system

is the strong and the weak point now. People **could** then digest like ostriches ; but the abuse of the power led to ‘surfeits,’ fevers, — inflammatory disorders of all kinds. People can now get a great deal more out of brain and nerve than brain and nerve were then trained to yield ; but the complement of the case is, that we witness more nervous ailment, and stranger phenomena of the nervous system, than were ever distinctly observed before. Science has helped to alter the conditions of our life by a variety of new disclosures. Sir Charles Bell’s great discovery in the matter of nervous structure has brought into light and prominence whole classes of diseases and liabilities ; and the all-important reforms caused by science in the study and dissection of the brain have thus far thrown our practical methods of dealing with disease and certain orders of crime into confusion, rather than fitted us to treat them as wisely as the next generation may do. At the same time, there has been a vast development of the science of animal chemistry ; and we are in the first astonishment at discovering how the curious mechanism of our bodies is sustained and kept going. Our condition is precisely that in which abnormal nervous states are most striking to us, and in which the subjects of food and poisons are interesting to the greatest number of people. If a wise student of history, secluded from the world, were told of the scientific and physiological conditions of the time, he would probably declare us to be liable to new and unaccountable manifestations through the nervous system ; probably to a fashion of poisoning by new methods ; and certainly to an epidemic credulity and suspicion about poisoning.”

The writer then proceeds at considerable length to argue from these premises the necessity for taking these changes into consideration in deciding upon the phe-

nomena of the present times, and urges most strongly caution in receiving prejudice as proof and assertion as corroboration of crime.

Profoundly involved in the mysteries of our nature, and in those connected with the tidal progress of our race, these great *predisposing* causes of delusion and crime only admit of indirect influence by human agency.

There are others of a more directly *exciting* character, which are dependent upon our social and political institutions, and which therefore admit of modification, if such can be pointed out, as likely to influence the spread of moral contagion in society. Our limits compel us to be very brief upon this most important topic. The evils to which we refer originate from the *Press*, the *Pulpit*, the *Bar*, the *Legislature*, and *Science*.

1. The great publicity given to the minutiae of atrocious crimes in the public *Press* is undoubtedly a fruitful source of crime in this and other countries. The evil is a great and an admitted one; the remedy is yet to be discovered. There is always floating on the surface of society a numerous class of persons of questionable moral sense, ripe and ready for every kind of vice, eager to seize hold of any excuse for the commission of grave offences against the person and property. This class is generally more or less affected by the publication of the minute details of murder, suicide, and other crimes. To them such particulars are dangerously suggestive. They tend, as it were, to form the *type* of the moral epidemic, and to give form and character to the criminal propensities. Esquirol, and many others, complain bitterly of the effect of the public *Press* in increasing the number of cases of maniacal crime. We will not multiply instances, but select one only, as especially interesting in its evident origination from the publication of the details of another case. In his own confession, after the trial,

Dove (*vide supra*) stated that he had no particular wish to get rid of his wife ; that Palmer's (Rugeley) case first directed his attention to *Strychnia*, and he could not describe what was his state of mind when he administered it ; he was "quite muddled."

Can anything more strongly illustrate the evil tendency of the publication of scientific and other details ? The particulars constantly retailed, also, in the papers, as to the state of health and mind, the deportment and general conduct, of notorious criminals, are the strongest inducements to many weak-minded persons to take the same means of acquiring notoriety. Add to this, that some time ago we met, in one of our most extensively circulated papers, with a popular account of the *precise method of making strychnine* ; and we need say no more to show the fearfully evil influence which an unregulated Press is calculated to have on society.

2. The influence which the Pulpit exerts is of two kinds, negative and positive, — the lack of proper, and the actual existence of improper, teaching. On the former point, we shall allow the Church to speak for itself : —

" It is impossible to doubt, or to conceal, that very much of the preaching of the present day has been defective in those qualities which the character, temptations, and sins of the times require. There has been, in many quarters, plenty of vague generality, and semi-sentimentalism, but very little of definite practical teaching and intelligible counsel. What is called, *par excellence*, the preaching of 'vital godliness,' has dealt very little with the real life of men, women, and children, in detail, day by day, and hour by hour. Conventional language, conventional thought, and conventional feeling have been excited and cultivated ; but these are, in many instances, wholly ineffective, or inadequate for the real battle of

life, with the world, the flesh, and the devil, in all their varied and ever-varying disguises, temptations, and deceptions. To what purpose is it to preach, Sunday after Sunday, on ‘imputed righteousness,’ to the man who is contemplating forgery to supply his extravagance; or upon ‘justification by faith only,’ to those who are about to ruin their friends or neighbors in order to sustain their own credit; or upon the ‘errors of Popery,’ to those who are knowingly selling adulterated articles, or using short weights and measures; or upon the doctrine of Predestination, to those who are ill-treating their wives, and bringing up their children like heathens? We fear that, in many cases, we have exchanged what was sneered at as mere ‘moral preaching’ for something which, in its practical effects, allows a good deal of immorality to go on, unrebuted by the clergy or by conscience.”<sup>11</sup>

With regard to positively improper teaching, it must be acknowledged that there are few now who, like that renowned street preacher mentioned by Mr. Villette, exhorted his hearers to become like Jack Sheppard; but perhaps the following incident indicates a state of morbid craving after effect not less objectionable. For obvious reasons we mention no names, but vouch for the correctness of the occurrence. A wretched man, W—, committed in cold blood a most atrocious crime, for which he was afterwards executed. A minister visited him, and hoped that his counsels were not thrown away. On his return home he assembled his congregation and preached, in a style of by no means contemptible eloquence, a sermon upon the penitence and pardon of “this poor erring, *yet* suffering, fellow-creature,”—depicted his tears and his sighs, and his reminiscences of his young days when he went to the Sunday-school,—the manner in which their joint petitions had ascended from

that cold cell to the Throne of Grace ; and all this in a manner so acceptable to his audience that very many were taken out in hysterics. It was not long before one of that district, if not that very congregation, was tried for a crime similar in nature, and for which he could give no reason, but that W—— had done so before.

3. With great caution would we comment upon the influence which the Bar may have upon the spread of crime. We are not prepared to suggest any remedy,—our law recognizes no man's guilt until it is proved, and all are equally entitled to such defence as the law allows. But knowing how powerful an incentive to crime is the love of notoriety, let any one glance over the impassioned address of Mr. Kelly to the court in the defence of Frost, on a charge of high treason, — the glowing eloquence of Mr. Phillips, laboring under the withering disadvantage of the confession of Courvoisier's guilt, — the pathetic appeal of Mr. Robertson in favor of Alex. Alexander, tried for the crime of forgery, — or the thrilling and soul-stirring peroration of Mr. Whiteside's defence of Smith O'Brien, — and then let him consider whether to be thus spoken of would not be to hundreds a strong incentive to go and do likewise.

4. The encouragement which the Legislature gives to crime is derived from the *uncertainty*, and in many cases the *insufficiency*, of punishment,—from the publicity and notoriety encouraged in such punishments (for it is a common saying, that one hanging produces twenty),—and from the growing unwillingness to inflict capital punishment even for the most atrocious crimes. For obvious reasons we do not dwell upon this point. As to the "publicity" of punishment, that is now (1869) happily at an end; and it may be that in course of time other evils will in like manner be remedied.

5. The uncertainty of Science, both mental and toxic-

cological, is a fruitful source of evil. The public press teems with illustrations of this position perpetually ; we have scientific evidence for the defence, and scientific evidence for the prosecution, almost as formally as we have counsel. The Staffordshire papers announced that Mr. Palmer's defence was to be *purely scientific* ! On one of the most important points now (1856) before the public, — the detection of a subtle and powerful poison, — the most eminent men are at variance. That they should differ amongst themselves in the details of a science not yet perfected is quite natural ; but that these things should be allowed to go forth to the world, so that men may screen their enormous vices under the wing of Science, is a phenomenon so monstrous as to be scarcely credible.<sup>12</sup> In the plea of insanity, also, the law is so vague, and the opinions of psychologists are so at variance, that whilst one man, who is only more accomplished in crime than his fellows, is acquitted as insane, we have occasionally the sad spectacle of a maniac dangling in a noose upon the gallows ! These things are a disgrace to science, and *these* at least are susceptible of some alteration for the better. If there *be* three men in the kingdom upon whose opinion the nation and our rulers can depend, surely, if formed into a permanent commission to inquire into the state of mind of supposed lunatics, their verdict would be much more satisfactory than that of a jury puzzled by the conflicting and desultory statements of casual witnesses, medical or otherwise. If there *be* three men who are capable of conducting an impartial chemical investigation, how much more weight and conviction would their unbiassed analysis carry to the minds of all men in disputed cases of poisoning than are attained by the present defective and vicious system of professional evidence !

Our work is done. It is ever a painful task to dwell

exclusively upon the delusions and crimes of mankind ; but it is in the *aberrations* of intellectual and moral nature that (as in other sciences) we must seek the clew to their normal laws. We have attempted to trace these aberrations, and have here met constantly with the conviction that man, who has an *individual* responsibility, is the plaything, not only of *his own* passions and instincts, but, through the laws of his being, also of those of others. We have seen that through these same laws, and others of still more profound and complex operation, large masses are likewise subject to evil influence, from the caprices or vices of one. In attempting to trace the causes of these phenomena, we have ventured to intimate that our Press has a liberty which amounts to license ; that our Spiritual Teachers are lax in their duties ; that Science is prostituted to evil purposes ; and that our Legislature is not entirely free from the imputation of adding *its* quota to the encouragement of crime. All this forms a problem of vast importance to humanity. Wise and thoughtful men are looking earnestly into it, and attempting its investigation ; and we, in this imperfect sketch, have but wished to add our mite to the endeavor, by inquiring into the history and conditions of the past, which is indeed "the interpretation of the present, and the prophecy of the future."

## IV.

### BODY *v.* MIND.

**PROBLEM:** *What effect has the work of the brain upon life, health, and mind?*

It is a curious and interesting study to trace the variety of opinions which have been held concerning the respective existence and the mutual relations of the Body and the Intellectual Principle,—opinions which have, in turn, taken up every position between the absolute non-existence of Mind, save as a form or function of Matter, on the one hand ; and, on the other, the merely phenomenal existence of Matter dependent upon the variations of a sentient or thinking immaterial existence, the Mind. It was only at a comparatively late period in the world's history that Mind obtained from philosophy its formal recognition as a distinct entity ; as something independent of, and distinct from, Matter ; closely united, yet not allied ; dependent for its manifestation, but independent in essence. In these latter days, when Mind and Matter are the watchwords equally of domestic discussion, of rival though friendly schools of philosophy, and of fierce sectarian controversy, it is difficult for us to realize to ourselves the state of the schools in which the laws of human nature were taught as a great whole. Yet so it was ; it was with man as with the universe at large,—he must be one and undivided. As the first attempts at the formation of systems of cosmogony were too vast in their designs to do less than account on one

theory for the whole cosmical phenomena, the formation of the universe was ascribed to *one* principle, as heat, atoms, attraction and repulsion, fire, harmony, numbers, &c., no note being taken of the ever-progressive workings of the individual forces continually in operation throughout nature, or the mechanical results of the conditional existence of matter.

Such being the case in the macrocosm, we need feel little surprise that the microcosm, man's *superficially* homogeneous nature, should remain long unanalyzed; still less, when we consider what an utterly inexplicable phenomenon is involved in its analysis into a material mass, and an immaterial active principle; no less than that something invisible, impalpable, undetectable by any accessible means of investigation, must take possession of a mass of inert matter, and do with it whatever may seem good unto it. Rather may we wonder at the boldness and originality of conception which led Anaxagoras, in the fifth century before the Christian era, to proclaim, in the face of all the incomprehensible theories of the earth and man, that a Supreme Intelligence, or Mind, was the cause of all those phenomena hitherto attributed to Fate, Chance, or some other shadow of a name; and that man was a compound being, consisting of a body and a spirit. It is true that the bubbling, seething, restless, explosive mind must have made itself felt to many, in constantly asserting its supremacy over matter; the difficulty of accounting for these things seems to have been obviated by considering the soul as consisting of finer atoms than the body: and no distinct enunciation of a separate principle was attained to. All honor, then, to Anaxagoras, worthily surnamed by his contemporaries, *Nous*, or Intelligence. Wild and impossible as were his notions of natural causation; eclipsed as was his glory by that of his great pupil and successor,

Socrates ; yet to him belongs the almost matchless merit of announcing, amidst a heathen world, and without the light of any external revelation, the primitive conception of a One Omnipotent Creative Cause.

Socrates appears to have been dissatisfied with Anaxagoras, because he could not fully apply his own conception to the practical explanation of nature's mysteries. In the *Phædo*, speaking to Cœbes, he says : "Having once heard a person reading from a book written by Anaxagoras, which said that it is Intelligence that sets in order and is the cause of all things, I was delighted with this cause, and it appeared to me to be in a manner well that Intelligence should be the cause of all things." He then proceeds to state how he expected that the author would be able to explain all phenomena according to this intelligence, by considering how it would be best for such and such things to exist, seeing that so they must be best if thus ordered ; also, "That he would instruct me whether the earth is round or flat, and would explain the cause and necessity of its being so," &c. "I was in like manner prepared to ask respecting the sun and moon and stars, with respect to their velocities ;—in what way it is better for them both to act and be affected as they are. . . . From this wonderful hope I was speedily thrown down, when, as I advanced and read over his works, I met with a man who makes no use of intelligence, nor assigns any cause for the ordering of all things, but makes the causes to consist of air, ether, and water, and many other things equally absurd." In this manner Anaxagoras appears to have been in advance of Socrates, though he could not fully wield his own idea.

From this time forward, the  $\psi\upsilon\chi\eta$ ,<sup>1</sup> or *anima*, which had hitherto appeared to be almost equally applicable to man and the brutes, and even to vegetables, had a more specific significance ; and man's compound nature be-

came almost imperceptibly a recognized dogma of philosophy.

It is often the case, in the earliest endeavors after truth, that the practical advantages are by no means commensurate with the actual progress made in knowledge. Under the early errors as to man's nature, the body was carefully trained along with the mind; both were treated as fellow-workers in one cause. The Academe, the Lyceum, and the Cynosarges were schools for the body as well as the mind,—there the wrestler, the discobolus, and the philosopher met for common purposes.

Under the advanced views, the body became gradually neglected and despised, though this result was naturally of tardy growth. Slowly, however, and certainly, the supremacy of mind was acknowledged; a powerful impulse was also given in the same direction by the diffusion of Christianity, and especially by the gorgeous visions of a glorious immortality which were opened to the astonished minds of men awaking from a long Pagan night. Body and mind were thenceforth held, by philosopher and Christian, to have separate and antagonistic interests. To the former, the body was a clog, an impediment to the acquisition of knowledge,—a something perpetually interfering, by its pains, its sorrows, and its imperfections, with the clear views of truth which he supposed the unencumbered soul would obtain,—constantly distracting the attention by its material relations and requirements,—ever of the earth, earthly,—tending to its own source, binding and dragging the soul along with it. To the latter, the Christian, the body was sin incarnate, the source of all evil and temptation, the barrier between the soul and heaven.

“ . . . Noxia corpora tardant,  
Terrenique hebetant artus, moribundaque membra.  
Hinc metuunt, cupiuntque, dolent, gaudentque, nec auras  
Suspiciunt, clause tenebris et carcere cæco.”

Epictetus may well illustrate the views of the philosopher. When severely treated by his master, Epaphroditus, under the most intense agony he smiled, and told him that he would break his leg with twisting it. This actually did occur, but without disturbing his equanimity. On being questioned as to the cause of this astonishing composure, he merely replied that the body was "*external*."

The small estimation in which the body was often held is not obscurely intimated by the question and address of *Aeneas* to his father, who had spoken of souls returning to their bodies :—

“ O pater, anne aliquas ad cœlum hinc ire putandum est  
Sublimes animas, iterunque ad tarda reverti  
Corpora? quæ lucis miseris tam dira cupido? ”

In the early centuries of the Christian era, the body seemed to be ever of less and less estimation. There is something even amusing in the excess of contempt in which it was held, and the abuse heaped upon it. A prison-house, a cage, a weary load of mortality, — these were, by comparison, complimentary terms. Gregory Nyssen calls it *δομῆς ἐργαστήριον*, “a fuliginous ill-savored shop, a prison, an ill-savored sink,” as the words are translated by an old divine. It is “a lump of flesh which mouldereth away, and draweth near to corruption whilst we speak of it.” St. Augustine defines the two natures thus, “ Domine, duo creasti; alterum prope te, alterum prope nihil.” At the best, the body was considered a workshop for the soul, *ἐκ τοῦ σώματος τῇ ψυχῇ φλοπόνησαι*. The torments of the body were so utterly despised, as scarcely to be considered personal matters :—

“ Tormenta, carcer, unguilæ,  
Stridensque flammis lamina,  
Atque ipsa poenarum ultima,  
Mors.”

In fine, the body was considered the source of all evil, and, as such, worthy of no consideration. The Platonists, as St. Augustine says, "hold that these our mortal members do produce the effects of fear, desire, joy, and sorrow, in our bodies; from which four perturbations (as Tully calls them), or passions, the whole inundations of man's enormities have their source and spring."

The Manicheans put the climax to these reproaches cast upon the body. They maintained that the body was so evil that its creation cannot be ascribed to the same author as that of the soul. Farindon says: "The Manichee, observing that war which is betwixt it (the body) and the soul, alloweth it no better maker than the Devil"; and Ludovicus Vives, to the same effect says: "They held all flesh the work of the Devil, not of God, and therefore they forbade their hearers to kill any creatures, lest they should offend the Prince of Darkness whence they said all flesh had originated." In their opinion, the great object of the government of the God of Light was to deliver the captive souls of men from their corporeal prisons. But one thing remained to be done after this, and that was reserved for the philosophers of our own era, viz. to deny the body any existence whatever, save as a phase, quality, or affection of the mind. This annihilation, however, it only shared in common with matter in general; in short, with all external nature.

Thus was an antagonism, a division of interests, instituted between the material and the immaterial elements of man's nature,—one which, in various forms, in accordance with the spirit of the times, has been propagated even until the present: now one and now the other being held in paramount esteem, in accordance with the demands necessary to be made upon their func-

tions. Here, brain has been had in honor ; there, thews and sinews. But the present is essentially an iron and a practical age ; both strong limbs and thoughtful minds are in requisition ; and the spirit of the age is in nothing more manifest than in the multiform attempts, by the spread of rational education and the increased attention to the sanitary condition of the masses, to balance the interests of these two hitherto conflicting elements. But according to the infinite varieties of mind, and the different aspects in which these attempts are viewed, there must ever be differences of opinion as to the extent and nature of the remedies applied to existing evils. Notes of alarm are sounded, and responded to ; parties are formed ; watchwords are in every mouth ; discussions, perhaps somewhat acrimonious, take place ; finally, out of evil comes good, for the sense of the community is ascertained, and the evil is modified, if not eradicated.

Such is the case at present (1858). Mr. Gladstone, at the conclusion of an address to the members of the Liverpool Collegiate Institution, made some allusion to the antagonism of which we have been speaking.

"There still remains," he says, "in some quarters a vulgar notion that there is a natural antagonism between corporeal and mental excellence. I trust that corporal education will never be forgotten ; that the pursuit of manly sports will always receive the countenance and encouragement, not only of the boys who engage in them, but of the masters who are responsible for the welfare of those boys."

Mr. Gladstone, denying the reality of the antagonism, illustrates his position by the case of General Havelock, who, when at the Charter House, was one of the quietest of the quiet, "who used to stand looking on whilst others played, and whose general meditative manner

procured for him the name of 'Philosopher,' subsequently diminished to 'Old Phloss,'" — yet who is now "distinguishing himself by a temper, a courage, an activity, a zeal, a consistency, and a dogged and dauntless resolution, equal at least to that of any man that England has produced this century."

This casual allusion of Mr. Gladstone's gave rise to a powerfully written but somewhat alarming essay upon the dangers of mental pressure, from our leading journal, which has caused much discussion *pro* and *con*. As this essay embraces the entire case for the prosecution, — that is, the whole of the allegations brought by Body against Mind, — we shall quote it in great part, as a preliminary to an examination of the question in some detail as to the effect of mental labor upon bodily health, in relation to age, temperament, and other circumstances of perhaps equal importance with either of these : —

" It was a great point in ancient philosophy, the value it attached to the body and the proper training of it, the preservation of its health, strength, and all its proper powers. Ancient philosophy did not despise the body, did not regard it as a mere husk or outside of human nature, or treat it as a despicable and absolutely vile thing ; it regarded the body as a true part of human nature, deserving of proper deference, for the failure of which it was sure to retaliate fearfully upon the whole man. Hence the gymnastics of the Greeks, which were not only fostered by the boxers and wrestlers, the drill-sergeants and corporals of that day, but went on under the solemn sanction of sages. There is a distinction between the tone of ancient and modern thought on this subject, and the ancient has certainly an advantage over the modern on this particular point, — at least, over the modern before the latest improvements. It has been

too much the fashion with us to decry the body, to talk it down, to speak scornfully of it in every possible way, to be always comparing it with the mind for the sole purpose of showing how vile and worthless it is in comparison, — a mode of speaking which, even if it is true abstractedly, may be indulged in such a degree as to involve a practical untruth. Our didactic books have been full of the praises of midnight oil, all our oracles of learning have been vehement in favor of unsparing study, and the mind has been subjected to the most acute stimulants, while the body has been left to take care of itself as it can. Of course, the great mass of our school and university youth takes the law into its own hands under these circumstances, and adopts very effective measures against being goaded to suicidal study, but a certain proportion have responded to the whip, and responded but too eagerly.

"These have been the tactics, we say, of our modern masters of the schools and encouragers of learning, — an unsparing use of the goad, a merciless appeal to student ambition and emulation, as if it was impossible to stir up these motives too deeply. But how one-sided is a discipline which applies this powerful, sharp, and penetrating stimulus to the mind, while it leaves the body to itself, or rather, what is worse, suppresses and flings aside the claims of the body, which has to fare as it can under the exclusive and oppressive dominion of its rival ! How partial is such a system, and superficial because partial ! After all our sublime abuse of the body, a body man has, and that body is part of himself ; and if he is not fair to it, he himself will be the sufferer. The whole man, we say, will be the sufferer, — not the corporeal man only, but the intellectual man as well. Particular capacities may receive even a monstrous development by the use of an exclusive stimulus,

but the reason and judgment of the man as a whole must be injured if one integral part of him is diseased. If the body is thoroughly out of condition, the mind will suffer ; it may show a morbid enlargement of one or other faculty of it, but the directing principle—that which alone can apply any faculty or knowledge to a good purpose, can regulate its use and check its extravagances—is weakened and reduced. How miserable is the spectacle of morbid learning, with its buried hoards, and its voracious, insatiable appetite for acquisition, united with the judgment of a child ! Such study does, in short, leave men children with remarkable memories and acquisitive powers, who know as much history, philosophy, and poetry as would make a learned man, but who are not a bit the nearer being men in consequence, because they simply know by rote what they know, — they do not understand their own knowledge. This is to a considerable extent the case with all morbid learning, where the general intelligence has not been cultivated, — which general intelligence depends on the soundness and health of the whole man; body and mind too. The picture of a Kirke White dying at the age of twenty-one of nocturnal study, wet towels round heated temples, want of sleep, want of exercise, want of air, want of everything which Nature intended for the body, is not only melancholy because it is connected with an early death, it is melancholy also on account of the certain effect which would have followed such a course unchecked if he had lived. We see, when we look down the vista of such a life, an enfeebled and a prostrated man, very fit to be made a lion of, like a clever child, and to be patted on the head by patrons and patronesses of genius, but without the proper intellect and judgment of a man. How sad even is the spectacle of that giant of German learning, Neander,

lying his whole length on the floor among his books, absorbing recondite matter till the stupor of repletion comes over him, forgetful of time and place, not knowing where he is, on the earth or in the moon, led like a child by his sister to his lecture-room when the lecture hour came, and led away home again when it was over! Is this humanity, we ask, as Providence designed us to be? Is it legitimate, rational human nature? It can hardly be called so.

We must not let the mind feed itself by the ruin of the body. The mind has no right to this indulgence, this dissipation, and whole-length abandonment to its cravings, any more than the body has to sensual indulgence. This mental dram, the noxious stimulant which produces this overgrowth of mind, is as contrary to nature as the coarser stimulant which unduly excites the body. The mind should be a good, strong, healthy feeder, but not a glutton. We have no right to despise the body or to speak of it only and exclusively as something which is vile in comparison with the mind. This language will lead astray. It will make ardent, ambitious student youth neglect health, and abandon themselves to the process of acquisition at the cost of body, and ultimately of mind too. Do not use too unsparingly the motive of ambition in dealing with youth. It is a motive which is perfectly honest and natural within proper limits, but when pushed to excess it produces a feeble, sickly, unmanly growth of character; it creates that whole brood of fantastic theorists, sentimentalists, and speculators which, in art, science, and theology alike, are the seducers and the corruptors of mankind." — *Times*, October 28, 1857.

The case, though certainly the extreme case, of the injury that *extreme and misdirected* application of the mind may do the body, is here fairly stated; the illus-

trations, however, are not fortunate. Kirke White, from his earliest infancy, was of so delicate a constitution as to be unfit (as was supposed) for any active occupation. The question may naturally arise, Would so active and irritable a mind, united to so feeble a frame, have lacked opportunity under any circumstances of rapidly wearing out both itself and its earthly tenement? The wasting fever of such a mind is not to be allayed by any restrictions as to hours of study, rest, or general hygiene. Neander was simply a recluse,—a solitary student; nothing worse seems proved or alleged. That he was so absorbed in his favorite pursuits as to be not very conversant with ordinary every-day matters, and even to be a child in many respects, in no respect distinguishes him from thousands of other men whose whole existence is bound up in concerns of much less moment. He lived to a ripe old age, in the enjoyment of moderate health, and all his intellectual faculties, we believe, to the very close of his life.

Setting aside the illustrations, there are some most important allegations, either distinctly expressed or implied, concerning the prominence now given to intellectual pursuits, to the neglect and injury of the bodily health. They amount to this:—

1. That mental labor, when approaching to extreme, has an unfavorable influence upon both the health and the character, ruining the former, and rendering the latter "feeble, sickly, and unmanly"; and that this is especially the case with young persons.
2. That in our educational systems generally, the body is neglected, and, at its expense, the mind urged beyond its normal powers.<sup>2</sup>
3. That in our universities, in particular, the standard of requirements for the obtaining of an honorable or high position is too high.

With the third proposition we are disposed to agree under certain restrictions and limitations ; as no doubt many young men, originally of feeble and degenerate constitution, ignorant of any physiological laws, and careless of all hygiene, do break down both in body and mind under the somewhat severe requirements of the curriculum, and a mistaken idea of the true method of mental application with a view to economy. To this subject we shall return shortly.

The first proposition contains the entire pith of the question which is the immediate object of our investigation, and we propose to inquire what are, from physiological considerations, the probable effects of mental labor upon the bodily health ; what are the actually observed effects ; upon what ages, temperaments, &c., these effects are most marked ; what circumstances are calculated to influence for good or for evil the reciprocal actions of mind and body ; and, finally, whether the earnest or even severe exercise of the mind may not, both directly and indirectly, be attended by results of a conservative nature, entirely opposed to the views above quoted.

It is scarcely necessary to allude even slightly to the proofs that the brain is the material organ (and the only one) through which the mind acts and communicates with the external world. These proofs are in brief derived from the facts that the brain proper is the one organ which increases, from the fish to man, in proportion to the intelligence ; that any part of the nervous system, except the brain, or any other organ of the body, may be seriously injured, if not destroyed, and this without any lesion of intelligence ; but that all injury to the cerebrum is followed by some lesion of intelligence, perception, or volition. Though the brain alone is capable of manifesting the operations of mind, yet it is not by any means universally held that the "*mental principle*"

resides solely in the brain. "It is possible," says Müller, "for the mind to act and receive impressions by means of one organ of determinate structure, and yet be present generally throughout the body."<sup>8</sup>

But although these principles are generally acknowledged, it is less understood that the brain, as an organ, is subject to precisely the same laws, chemical, dynamic, and automatic, as other organs and tissues, though physiology teaches this fact as strongly as any other. Thus it is readily granted that the action of a muscle tends to the increase of the circulation in its tissue, and, if long continued, to the hypertrophy or increase of its substance. The same phenomenon takes place in the passive tissues, as the skin, bones, tendons, and ligaments; whenever often-repeated pressure or tension is exercised upon these, their substance is developed in proportion to the requirements of the case.

It is also not disputed that every action of the body is attended by the phenomena of nutrition, including the decomposition of some of the old tissue, and the supply of its place by new particles, and that the evidences of such decomposition in the blood and the excretions are in exact ratio to the energy and continuity of such actions. But although the laws of nutrition are in as active operation in the brain as in any part of the system, we find it at first difficult to realize the fact so well established by irrefragable physiological evidence, that these acts of nutrition are in their essence the necessary conditions of every act of intelligence, perception, or volition; that, "like all other tissues actively concerned in the vital operations, nervous matter is subject to a waste or disintegration, which bears an exact proportion to the activity of its operations; or, in other words, that every act of the nervous system involves the death and decay of a certain amount of nervous matter, the re-

placement of which will be requisite in order to maintain the system in a state fit for action";<sup>4</sup> in short, that every idea, every emotion, every act of volition and every perception, however passive or fleeting, is necessarily attended by a waste and decay of a certain portion of the brain-tissue. The author just quoted continues thus: "In the healthy state of the body, when the exertion of the nervous system by day does not exceed that which the repose of the night may compensate, it is maintained in a condition which fits it for moderate constant exercise; but unusual demands upon its powers — whether by the long-continued and severe exercise of the intellect, by excitement of the emotions, or by the combination of both in that state of *anxiety* which the circumstances of man's condition too frequently induce — produce an unusual waste, which requires for the restoration of its powers a prolonged repose."

It is certainly inexplicable how matter and mind can act and react one upon the other: the mystery is acknowledged by all to be insolvable, and will probably ever remain so; the co-ordinate phenomena, however, are open to investigation, and it is clearly ascertained that to certain mental conditions a certain state of the material organ is attached, and for certain mental acts certain chemical changes in this organ are requisite.

The tendency of the speculations of the present day (1869) is to cut the Gordian knot of the difficulty here alluded to, by recognizing only *one essence*. The mental condition *is* the state of the material organ, and the chemical changes in the organ *are the source* of the mental acts. "Mind can only be studied, with any prospect of advantage, by the physiological method," says Dr. Maudesley.<sup>5</sup> Professor Huxley is still more precise. He says<sup>6</sup> "that all vital action may be said to be the result of the molecular forces of the protoplasm which

displays it. And if so, it must be true, in the same sense and to the same extent, that the thoughts to which I am now giving utterance, and your thoughts regarding them, are the expression of the molecular changes in that matter of life which is the source of our other vital phenomena. . . . After all, what do we know of that '*spirit*' over whose threatened extinction by matter a great lamentation is arising, . . . except that it is a name for an unknown and hypothetical cause or condition, of states of consciousness? In other words, matter and spirit are but names for the imaginary substrata of groups of natural phenomena." And again: "In itself it is of little moment whether we express the phenomena of matter in terms of spirit, or the phenomena of spirit in terms of matter; matter may be regarded as a form of thought; thought may be regarded as a property of matter; each statement has a certain relative truth. But with a view to the progress of science the materialistic terminology is in every way to be preferred."

It would lead us too far from our special subject to enter here upon any controversy upon this vexed question. That it is much more important than the distinguished writer just quoted allows, we firmly hold. It appears to us to involve the reality or otherwise of our hopes of immortality; but we content ourselves with entering a formal protest against the doctrine, and its annexed idea that it is merely a question of terminology. It is true that for purposes of discussion, and in a *physiological* point of view, the terms *Mind* and *Brain* may be used synonymously. The brain is material; the mind is, we conceive, immaterial; yet as we know and can know nothing abstractedly of mind apart from its manifestations through its material organ, it is convenient occasionally to use these as convertible terms,

especially when concerned with laws of action which appear to be connected with, if not dependent upon, material changes. Yet nothing can be more certain than this, that however dependent mind may be for its manifestations upon a material organ, it is essentially different in nature. Were there no presumptive evidence of this from the phenomena of memory, imagination, &c., it would be supplied abundantly by the frequent instances of the persistent integrity of the mind amid the utter decay of the bodily organs. "*My friends,*" said Anquetil, when his approaching end was announced to him by his physicians, "*you behold a man dying full of life!*" On this expression M. Lordat remarks : "It is indeed an evidence of the duplicity of the dynamism in one and the same individual ; a proof of the union of two active causes simultaneously created, hitherto inseparable, and the survivor of which is the biographer of the other." But we return to the subject from which this can only be viewed as a digression.

We have stated above that the brain is subject not only to the same chemical laws of change as the other organs, but to the same automatic influences. In the same manner that certain muscular actions, at first painful, difficult, and complex, become perfectly easy, and are performed almost (if not altogether) without attention, after long practice and frequent repetition, so processes of thought, which originally induce painful sensations, and confusion in the mind or brain, become, by repetition, familiar and simple, and are attended by no pain at the time, nor any inconvenience subsequently. And thus the most complex operations of the mind, calculations involving the most intricate processes, and analyses of the utmost difficulty, are at last performed with an ease, and almost unconsciousness, rivalling the extempore performances of the most finished *artiste* on a

musical instrument. It is of importance, in passing, to mark this. We pass on now to notice briefly the various modes in which mind and body affect one another, in order to illustrate the dynamism of the former, and its subjection in many respects to material laws.

A due supply of arterial blood is requisite for the proper action of the mind. Loss of consciousness follows the abstraction of this stimulus. The quality of the blood circulating through the brain also influences the development of ideas ; if it be deficient in oxygen, delirium of course follows. "The digestion of food introduces a quantity of imperfectly assimilated material into the circulation. Until this new material has undergone the necessary changes, and while certain matters altogether unfit for nutrition are mingled with it, it is not adapted to excite those states of the brain which are necessary for the proper manifestation of mind ; and as it is conveyed to that organ by the circulation, it produces an injurious change in it, and impedes or disturbs the mental functions. Hence the indisposition to mental labor experienced by some persons after meals." The same effects are produced, in a more marked degree, by wine, spirituous liquids, narcotics, and the presence of bile or urea in the blood. The organic affections of the brain necessarily and obviously modify the mental conditions, not only by destroying the efficiency of a certain portion of the tissue, but by interfering with the due performance of the organic changes in the other parts.

X

All this is sufficiently comprehensible, that, the organ being deranged, it is no longer capable of performing accurately the behests of the mind. It is much less so, how the derangement of the immaterial essence can affect the organic structure ; yet the fact is indisputable. The simplest illustration may be drawn from an occurrence not unfrequent in ordinary experience. A person

in perfect health receives a letter containing, perhaps, some fatal news; he drops down, smitten with apoplexy, and after death it is found that the cerebral tissue is torn by an effusion of blood into its substance. Joyous emotion may produce the same or analogous results. A young Frenchman received a complimentary letter from the Directory ; he was struck motionless, and his head immediately became affected in a manner from which he never recovered.

The paleness of skin and weakness of the circulation accompanying the depressing emotions ; blushing, and other determinations of blood ; excitement of the arterial action under the influence of anger and the allied passions, — all illustrate powerfully and sufficiently the dynamism of mind.

The effect of mental action is forcibly portrayed in Virgil's description of the Pythoness under inspiration : —

" Her color changed ; her face was not the same,  
And hollow groans from her deep spirit came.  
Her hair stood up ; convulsive rage possessed  
Her trembling limbs, and heaved her laboring breast.  
Greater than human kind she seemed to look,  
And with an accent more than mortal spoke ;  
Her staring eyes with sparkling fury roll,  
When all the god came rushing on her soul.  
At length her fury fell ; her foaming ceased,  
And ebbing in her soul, the god decreased."<sup>1</sup>

Enough has now been adduced to show the powerful influence which states of mind have upon the body ; we must now inquire more particularly what are the probable and the observed effects of continued mental labor upon the physical constitution.

In accordance with the physiological principles already enunciated, the first effect of laborious thought will be an increase in the circulation through the brain, and a

more active performance of the nutritive functions in that organ, consisting of decay and replacement of particles. Until the brain becomes accustomed to this increased activity of function, it is to be expected that it will be attended with certain unpleasant consequences, as headache and confusion,—just as a person who has fatigued one set of muscles by hours of exercise will feel pain and stiffness in these muscles, until, by frequent repetition, the same actions are performed for even a greater length of time with perfect ease, and without any ill consequences resulting. Rest, then, will (it is to be expected on *a priori* considerations) restore the integrity of the cerebral tissue; and frequent repetition of the same mental gymnastics will render easy and pleasurable what was before so difficult and painful. But it may be objected that the brain is a very delicate organ, and much more liable to suffer from over-use than the coarser texture of the muscles. This *may* be true; yet it must be remembered that the brain is to be considered as perfectly adapted to the performance of its functions — thought, perception, volition, &c. — as the muscles are to the performance of their varied motions; and if the texture of the one be so much stronger than that of the other, the mechanical injuries to which it is liable are infinitely multiplied.

Pursuing the same expectant reasoning, we shall be prepared to meet with a modification of the tissue of the brain from continued excited nutrition; and owing to the peculiar mechanical conditions of this organ, it can only be, as a general rule, manifested by an increased firmness of texture. Under long-continued application to one class of subjects, we believe the form of the head may be altered, even in the adult. A friend of the writer has had two casts taken of his own head at the interval of several years, during which time he was entirely devoted

to artistic pursuits, which he had adopted late in life. The contrast between the two is very striking in the development of certain parts of the forehead and parietal regions. Functionally, also, we must of course expect a continually increasing facility and aptitude in all sorts of mental work ; whilst from the concentration of the nervous energy upon thought, the tendency to active exertion will naturally become more and more limited. And here we may consider that we meet with the root of the various evils which have been so constantly attributed to mind labor. Not what is *done*, but what is *neglected*, seems to be the *fons et origo malorum*. The weary eye, the cramped limb, the demands of the body, — all are neglected, from the all-absorbing nature of the pursuit, and a train of evils must necessarily result, which are naturally enough, but perhaps too readily, laid to the account of mental labor, but which result with equal frequency from all sedentary occupations whatever.

In young persons, the mode of response to stimulus and requirements on the part of the system is somewhat different, both in nature and extent, from that observed in adults. In early life, and up to the margin of manhood, a great part of the energy of the vital functions is devoted to the direct nutrition and consolidation of the bodily organs. The tissues are soft and yielding, and are capable of being very much modified by external agency. If a strain of unusual force be applied, the result is not necessarily, as in the adult, fatigue, which may be readily relieved by rest ; but the organ yields, and its efficiency is impaired. Thus the heart over-excited in a child will become dilated ; the bone on which unnatural pressure is exerted bends ; the ligament, often or long stretched, yields and becomes relaxed. Now, the brain being subject to precisely the same laws as other organs, as to nutrition, we shall expect to find here also a differ-

ence in its response to the calls made upon its action. Long-continued exercise of the mental functions will be attended, as in the adult, by increased circulation and activity of the nutritive functions of the brain ; but there is this difference, that the brain tissue here is soft and yielding, and instead of offering the normal resistance to the abnormal afflux of blood, it yields to the pressure, the vessels become enlarged, perhaps permanently, and congestion is the result, — productive not only of serious consequences for the time being, but, by the very fact of its occurrence, inducing an ever-increasing liability to its *recurrence*. Then perhaps the overcharged vessels make an attempt to relieve themselves by pouring out some of their fluid contents, and effusion into the ventricles or on the surface of the brain is the consequence. It is easy to conceive, from these considerations, what is the lesson which physiology would teach us in reference to the consequences which may be predicted from intense application in the young. These consequences will be still more marked and serious, if the attention be confined exclusively to one class of ideas ; if one faculty be cultivated and urged forward, to the exclusion or neglect of the others.

The testimony of writers on the subject of the effects of mental labor upon the body is singularly unanimous ; none seem to doubt its dire results, especially if commenced young, if pursued long and constantly, and if directed too exclusively to a restricted range of ideas. Dr. George Moore, who has entered deeply into these inquiries, makes the following observations : —

“The brain of a child, however forward, is totally unfit for that intellectual exertion to which many fond parents either force or excite it. Fatal disease is thus frequently induced ; and where death does not follow, idiocy, or at least such confusion of faculty ensues, that

the moral perception is obscured, and the sensitive child becomes a man of hardened vice, or of insane self-will. . . .

"As the emulative success of classical education is generally dependent on an excessive determination of mind, for the purpose of rapidly loading the memory, it is of course attended, for the most part, with a correspondent risk to the nervous system of aspirants after academic honors. Mentally speaking, those who bear the palm in severe universities are often destroyed by the effort necessary to obtain the distinction. Like phosphorescent insects, their brilliance lasts but a little while, and is at its height when on the point of being extinguished forever. The laurel crown is commonly for the dead, if not corporeally, yet spiritually; and those who attain the highest honors of their *Alma Mater*s are generally diseased men.<sup>8</sup> Having reached the object of their aim, by concentrating their energies on one object, an intellectual palsy too often succeeds, and their bodies partake of the trembling feebleness. . . .

"The strongest brain will fail under the continuance of intense thought. All persons who have been accustomed to close study will remember the utter and indescribable confusion that comes over the mind when the will has wearied the brain. . . .

"The modern system of education appears to be altogether *unchristian*; undoubtedly it contributes much to swell the fearful list of diseases, for it is founded on an unhealthy emulation, which ruins many both in body and in soul, while it qualifies none the better either for business, knowledge, usefulness, or enjoyment, but rather, together with the influence of the money valuation of intellect, causes the most heroic spirits of the age to hang upon public opinion and the state of the market. . . .

"We know that determination must vastly excite the

brain, when the student or the statesman is induced, by desire for doubtful distinction, to spend his days and nights in the distractions of alternate hopes and fears. Under the strain of these conflicting passions how many a mighty mind sinks into insanity, amidst the mysterious darkness of which some demon whispers close to the ear, ‘No hope, no aim, no use in life, — the knife is now before you !’ ”<sup>9</sup>

These are frightful accusations against study and the present system of education ; yet we quote them at length, because they are but the echo and *résumé* of the charges which have been entered against such pursuits, both before and since Festus accused Paul of being mad through much learning. Both amongst ancients and moderns it has been the practice to accuse study as one of the most frequent causes of madness. Fernelius and Arculanus enumerate “study, contemplation, and continual meditation” as especially tending to mania ; “Of all men,” says Lemnius, “scholars are most subject to it” ; and Rhasis adds, “Et illi qui sunt subtilis ingenii, et multæ præmeditationis, de facili incidunt in melancholiæ.” Origanus says : “Contemplatio cerebrum exsiccat et extinguit calorem naturalem, unde cerebrum frigidum et siccum evadit quod est melancholicum. Accedit ad hoc, quod natura in contemplatione, cerebro prorsus cordique intenta, stomachum heparque destituit, unde ex alimentis male coctis, sanguis crassus et niger efficitur, dum nimio otio membrorum superflui vapores non exhalant.” In this, spite of its antiquated physiology, there is much sound sense, still indicating, in reference to the subject at issue, that it is the omissions, not the commissions, that are the chief sources of evil. Machiavel, however, holds the direct influence of study in weakening the body, dulling the spirit, and abating the strength and courage. Quaint old Burton relates

that "a certain Goth, when his countrymen came into Greece, and would have burned all their books, he cried out against it, by no means they should do it, — 'leave them that plague, which in time will consume all their vigor and martial spirits.'" Descuret, in his "Medicina delle Passioni," speaks of the results of the study-mania (*mania dello studio*) as loss of memory, epilepsy, catalepsy, madness, sudden and premature death; saying that "lo studio, cibo dell'anima, esige per parte nostra grande sobrietà, se vogliamo che non si trasformi in veleno, la cui azione mediciale non è meno funesta al morale che al fisico." Few writers now venture to speak of study with St. Augustine as "scientia scientiarum, omni melle dulcior, omni pane suavior, omni vino hilarior"; or with another old worthy, "Studia senectutem oblectant, adolescentiam alunt, secundas res ornant, adversis perfugium et solatium præbent, domi delectant," &c.: and yet both these had tried it to an extent not often reached in these modern times. To return to modern writers: Müller states as the physiological effect of excessive exercise of the mind, that it "diminishes the activity of the nutritive processes"; we find him remarking, however, shortly afterwards, that "the culture of the mind by observation and varied attainments has an ennobling influence on the corporeal frame, and particularly on the lineaments of the face."

M. Tissot brings an enormous list of accusations against the over-application of the mind, with many interesting illustrative cases. A young gentleman had given himself up to metaphysical pursuits, which he pursued with ardor, notwithstanding that he felt his health failing. At last he fell into such a condition that he appeared to see nothing, hear nothing, and spoke not a word for the space of a year. He says that he has seen "very promising children, who have been forced to

study so constantly by severe masters that they have become epileptic during the rest of their lives." On this subject Sir H. Holland says : "In the course of my practice I have seen some striking melancholy instances of the exhaustion of the youthful mind by this over-exercise of its faculties. In two of them, unattended by any paralytic affection, or other obvious bodily disorder than a certain sluggishness in the natural functions, the torpor of mind approached almost to imbecility. Yet here there had been before acute intellect, with great sensibility, but these qualities forced by emulation into excess of exercise without due intervals of respite, and with habitual deficiency of sleep."

Galen mentions a grammarian who was seized with an epileptic fit when teaching or thinking intently ; and Hoffman mentions a young man who had a momentary fit whenever his mind or his memory was overloaded. Petrarch suffered in a similar manner. The evils charged further by M. Tissot upon intense study are gout, premature baldness and gray hairs, phantasms, delirium, mania ; "tumors, aneurisms, inflammations, scirrhosities, ulcers, dropsies, headaches, drowsiness, convulsions, lethargy, apoplexies, and the want of sleep," besides many other secondary results.

But it is time to leave this enumeration of evils, and to inquire with what amount of justice they are attributed to mental work,— under what counts of the indictment Mind must plead guilty,— whether there are any, and what, extenuating circumstances,— to what the verdict of not guilty, or at least not proven, must be returned,— and whether there may be found some remedy of easy application for the evils which confessedly exist, however caused.

We will commence with an examination into the circumstances connected with education in early life,

suppose up to the age of fifteen. It is not to be denied, and we have already given in our adhesion to the opinion, that intense study in early life is likely to be very hurtful in its consequences ; and the practice of forcing and urging the faculties of children into premature development cannot be too strongly and earnestly deprecated. Yet we believe that this practice is by no means so common as has been represented.

The writer is intimately connected with one large establishment where upwards of two hundred youths from eight to twenty years of age are educated ; the inducements to study and to excel are strong and valuable, but the discipline is mild and judicious. During ten years of careful observation, he can recall but three or four instances of any injury resulting from severe mental application : none in which more than a temporary cessation from study has been requisite, and, with one exception, all occurring in subjects where there was every reason to suspect a morbidly excitable organization. The exception was that of a naturally very dull boy, with a strong desire to overcome difficulties, which, in fact, were only such to him.

That children are overworked occasionally is notorious ; but for this there are other causes in operation besides either force or the principle of emulation. The recent<sup>10</sup> publication of the regulations of the University of Oxford, "Concerning the examination of those who are not members of the University," may fairly be supposed to furnish an average standard of the requirements of education for boys under fifteen and young men under eighteen ; and a perusal of these will at once show that boys of average capacity need exert no extraordinary pressure in preparation. Reading, writing from dictation, parsing, short composition, and the first four rules of arithmetic, are the substance of the first five articles ;

the sixth and seventh comprise a very elementary knowledge of geography and English history. Eight subjects are then given for selection ; the candidate must be examined in one at least, and not in more than four, to be chosen by himself. Latin, Greek, French, and German are the first four subjects, in each of which the exercise is simply the translation and parsing of a passage in one of the most elementary school-books, and, in all but Greek, the translation of an English passage into the others. The fifth is mathematics, including the first two books of Euclid, arithmetic, and simple equations. Sixth, elementary mechanics. Seventh, chemistry. Eighth, botany and zoölogy. In all this there is nothing very oppressive, even if required from boys of thirteen rather than fifteen ; but of course the curriculum of many of our schools is very much more comprehensive than this ; and in them we meet not unfrequently with over-tasked brains, and the consecutive train of evils. But how has this been brought about ? Is it necessarily by compulsion, or the goad of emulation, or may there not be a much deeper source of the evil ?

Two boys, brothers, enter a large school, are placed on the same form, and are subject to the same regulations, the same tasks, the same inducements. One is studious, cares little for out-door amusements, and perhaps breaks down in health even before accomplishing the object of his ambition. The other is more given to sport or play than to work : he *may be* a blockhead ; but, on the other hand, he *may* take a respectable or even a high position. The question may fairly be asked, "Whence arose this difference ?" Not, clearly, because one was goaded, and the other not. Why did the first boy prefer his books to the football or cricket ? Plainly because his organization was weaker in stamina than that of the other ; exertion of an active character was a

toil ; the mind or the body must be occupied, and as he cannot exert the one, the other must bear the burden. On some occasion, by momentary excitement, he is drawn into some arduous play. Look at him when it is over. He sits down upon a stone, or leans against a wall, his face almost ghastly in its pallor, his hand pressed to his side, his temples throbbing, and gasping for breath. He returns to his books, to which he thenceforth clings as his best friends ; yet this mischief is not the *result* of his mental application, both the one and the other are the result of a feeble physical frame, which is now undergoing a process of probation, of which none can predict the termination. He may break down, or he may become an intellectual giant ; but, should the former be the case, study, for which he was apparently better fitted than for anything else, can scarcely be blamed. Would not an active life have been a still shorter one ? For such constitutions there is much hope, if they can be placed under intelligent care, and individually watched, guarded, and assisted ; but amongst the masses this is as a rule impracticable ; there is no resource but the school, where general laws must be in force ; and it is a question whether, were the standard of requirements lower, this individual class of mind would be less subject to pressure.

We have nothing to say on the subject of cramming the minds of mere infants with heterogeneous learning. The evils of such a course are utterly incalculable, but so obvious that those who do not instinctively recognize them would most probably be impervious to any argument. The stunted and deformed mind and body of the child will presently furnish a reproach bitter enough, and a lesson too late to be practical. There are, however, certain exceptional cases on record, proving that extreme precocity is not necessarily and invariably con-

nected with early decay. One such is that of the archaeologist Visconti, who died in 1818, aged sixty-seven. He knew his alphabet at eighteen months old, and could read Latin and Greek fluently before completing his fourth year. Bentham read Rapin's "England" when three years old, and at eight was a proficient on the violin. He lived to the age of eighty-five. Goethe, Scott, and Franklin, each in early childhood evinced decided indications of the talents for which they were distinguished in after life. Two of them lived to extreme old age, and the third to sixty-two. Many other instances might be adduced, but these are sufficient to illustrate the principle.

There is one other consideration of extreme importance to be urged in extenuation of the morbid influence supposed to be exerted by early mental culture upon life and character. We have in the preceding essay pointed out that in certain portions of all classes of society there are elements of degeneration at work, tending to the extinction of races or families. We are perpetually meeting with the last term of these vanishing series, and witnessing the circumstances attendant upon their final disappearance. Young people in all ranks, with and without education, die daily, the victims of these hereditary influences; certainly, we may affirm, with much greater proportional frequency in those classes where education is, and must necessarily be, the exception rather than the rule. When those die whose minds have been left to lie fallow, we attribute their death probably to the real cause; but under circumstances of individual taint precisely similar, when the studious child dies, we ascribe the event to his studies in great measure. It is a noteworthy phenomenon, that amongst these degenerate beings, previous to extinction, there is often a remarkable development of certain facul-

ties, amounting to genius. This is alluded to in a passage from M. Morel's work, previously noticed : —

“ Il existe des individus qui résument dans leur personne les dispositions organiques vicieuses de plusieurs générations antérieures.

“ Un développement assez remarquable de certaines facultés peut quelquefois donner le change sur l'avenir de ces malades ; mais leur existence intellectuelle est circonscrite dans certaines limites qu'ils ne peuvent franchir.”

Such cases as these have generally a short and brilliant career ; and it is of such that the remark is so frequently made, “ What promise of future greatness is here nipped in the bud ! ” Than this nothing can be as a rule more mistaken, — the fiat of early dissolution is written on the degenerate organism ; a lurid phosphorescent light accompanies its decay, a light of which decay is as necessary a condition as is the marsh to the *ignis fatuus* ; and if by any means this downward tendency be stopped, it is extremely rare that the autumn of life fulfils the promise of its spring. The life is short, not because the intellectual development is precocious or forced, but it is short *and* bright from a common cause deeply ingrained in the original exceptional organization.

There are, however, certain unhappy cases where the ambition for intellectual distinction is *directly* concerned in destroying health ; these are they where the ability is not equal to the aspirations, and where the feeling of incompetence leads continually to more and more strenuous exertions. The boy of talents below mediocrity, and with a strong desire (from whatever motive) to excel in certain pursuits, is indeed in a pitiable case,\* and will rarely escape serious injury. And this is by no means

\* The case is strictly analogous to that of a weakly or lame boy wishing to excel in running or jumping; a sad instance of which kind of perverted vanity was observed in Byron.

confined to early life. We know of few more melancholy objects for contemplation than a man) or, as it very frequently happens too, a woman) inspired with a love for a certain art, — poetry, painting, or music ; mistaking this love for talent, and wearing out life in hopeless efforts at performance, — ever failing, yet sometimes happily unconscious of the failure ; trying again and again, yet ever again coming far short of even their own imperfect ideal, — finally succumbing, worn out by constant attrition against the rock of the impossible. How many of these bruised and broken spirits will the experience of every thoughtful and observant man suggest to him !

If we now inquire more particularly into the circumstances attendant upon University education, and the charges brought against the severity of the requirements for high honors, we shall find that very much the same limitations are requisite in our adoption of these views as in the case of children. Men sink under the course, not from the direct influence of mental application, but because they have not the stamina to bear even moderate exercise of the mind ; — because they are of degenerate constitution, favoring irregular circulation and congestions ; — because, being such, their aspirations are too high for their powers, — and because, feeling all this, they are prone to neglect the most ordinary rules of hygiene. The pale, timid student, who labors under continual fear of being plucked, and by night and by day crams his mind with all sorts of miscellaneous knowledge, which it would require a much more powerful intellect to analyze and arrange, — he can with no justice be held up as a proof that the requirements of his University are too high.

It is, of course, impossible to say with any accuracy what proportion of our youth do break down under the

strain on mind and body attendant upon the reading for honors. We are not disposed to deny that many such instances do occur ; but still we must maintain that not what is *done*, but what is left *undone*, is to blame. The woodman, every now and then, pauses to sharpen his axe : let him neglect this, and continue striking against the unyielding tree with his blunt instrument, and by and by it breaks. Hear how Ficinus comments upon the thoughtlessness of the bookworm : —

“ Solers quilibet artifex instrumenta sua diligentissime curat, penicillos pictor ; malleos incudesque faber ferrarius ; miles equos, arma venator, auceps aves et canes, cytharam cytharœdus, &c. ; soli musarum mystæ tam negligentes sunt, ut instrumentum illud quo mundum universum metiri solent, spiritum scilicet, penitus negligere videantur.”

✖ But is not the alarm on this score even too great ? An able writer, from whom we have already quoted, answers this question very positively : —

“ The mothers and merchants of England need not be in so much alarm for the sanitary condition or the practical character of the promising sons whom they may have committed to the English University system. Reading men at the Universities, taken as a class, are so far from being reckless about the state of their bodies, that they are generally very careful of their health. They are more regular than other men in their hours and in their exercise, more abstemious in their diet, more free from vicious habits which injure the constitution. They imitate the candidates for the Olympic wreath in their sobriety and continence, if not in the more active part of their training. We will venture to say nobody would know them from their fellows by their cadaverous appearance. They have among them, as far as our observation extends, at least their fair proportion

of men who follow the motto, 'to be ever foremost' in the cricket-field, the boat-race, and the tennis-court, as well as in the Senate-house or the Schools. So far from being taught by their preceptors to strain their minds to the utmost, and take no care of their bodies, they are constantly warned of the necessity of keeping themselves in good physical order by tutors, private tutors, friends, and all who are interested in their success. Men have the wit to see that good health and spirits are necessary to carry them through the labors of an examination, and that they cannot study to any purpose without a clear head, or secure a clear head without a good digestion and sound sleep. We believe the life of a regular reading man at Oxford or Cambridge, with his eight hours' work a day (and no more is needed for high honors), his daily air and exercise, his cheerful society, and his reading party in the Highlands or at the seaside in the long vacation, to be as healthy a life as any,—at least as healthy as life in a counting-house or a solicitor's office. If there is a little exhaustion immediately after the last examination, three months with a knapsack amongst the Alps generally sets all right again. The victims of wet towels and strong green tea are, generally, not regular reading men, but gentlemen who have been devoting themselves exclusively to their physical development till within a few weeks of their 'Little Go,' and are compelled, at last, to put on the steam in preparing for that event. Of course, men are sometimes fools enough to overwork themselves at classics and mathematics, as there are sometimes fools enough to overwork themselves at law or physic; but for one man who has been injured by reading at the University, we think we could point to two who have been injured by boat-racing, and four who have been injured by intemperance and the other vices to which idleness leads.

"University education is very apt to get the credit of destroying constitutions which, in point of fact, it only finds weak and leaves as it found them. A man who comes up to Oxford or Cambridge with a confirmed and hereditary tendency to consumption will not be saved by his Oxford or Cambridge accomplishments from sinking into an early grave. Nor must a man expect that by having taken a good class he will be rendered physically equal to employments to which he and everybody connected with him would otherwise have known that he was physically unequal. A sickly and sensitive youth shows intellectual power, and gets a good place in the class list. Immediately, he or his friends take it into their heads that he is to be Lord Chancellor; and he is sent, as Lord Eldon said, to 'live like a hermit and work like a horse,' in order to realize that moderate object of ambition. Being by nature absolutely incapable either of living like a hermit or of working like a horse, he of course breaks down; and then his failure is attributed to University education. If the poet Cowper had been, as he well might have been, a classical first-classman at Oxford or Cambridge, instead of being brought up in the most practical way in a lawyer's office, Oxford or Cambridge would have borne the blame of his inability to pass his life cheerfully in lonely chambers in the Temple, and to compete with hard strong natures in the trying arena of the Bar. The fact is, that these men do not lose physical power by being put through a good course of reading, for the simple reason that they never had the physical power to lose. They gain intellectual power, which they might otherwise have never possessed, and are thereby enabled to be at least of some use to the world."

It must not be denied, however, that the tests applied at the present day in our principal Universities, to ascer-

tain the attainments of their alumni, are serious matters, — so serious that men should have a firm conviction of their strength before entering so arduous an arena. Strong, healthy mind, good *working constitution*, temperance in every respect, even in work, — all these are essentially requisite. For the brain tissue of a large portion of these workers is still in a condition not so inured and habituated to work that it has become easy, and even second nature, — it is still labor.

Perhaps it will not lead us too far from our principal design to take a survey, as brief as the nature of the subject will permit, of the sort of ordeal through which the candidates for honors at the Universities of Cambridge, Oxford, and London have to pass, chiefly as connected with the B. A.

The first to which we open is the Senate-house examination, in January last, at Cambridge, — the Mathematical Tripos. Three hours in the morning of the first day are allowed for the answering of twelve questions, such as the following (No. 8) : —

“Prove that in the parabola  $SY^2 = SP \cdot SA$ . —

“A circle is described on the latus rectum as diameter, and a common tangent  $QP$  is drawn to it and the parabola ; show that  $SP$ ,  $SQ$ , make equal angles with the latus rectum.”

The mathematician will see, that although there is nothing very obscure in this, yet the labor of answering twelve such questions in three hours requires a clear head, a ready method, great previous practice, and last, though by no means least, a hand of almost lightning velocity, merely to do the mechanical part. It is true that the examiners state, if asked, that *all* the questions need not be answered, — that more are asked to give variety, and to afford equal opportunities to different orders of students ; yet the aspirant after the highest hon-

ors will strive after all : we *know* of instances where all has been accomplished ; yet the labor is prodigious.

In the afternoon of the same day, two hours and a half were devoted to twelve other questions ; the one following is but the half of No. 10 : —

“Prove the formula

$\cos(A - B) = \cos A \cos B + \sin A \sin B$ .  
A being greater than B, and each angle less than  $90^\circ$ .”

On the second day, the same hours were devoted to twenty-four other questions, of which one must serve as a specimen, it being neither more nor less elaborate than the rest : —

“A ray of light passes through a prism in a plane perpendicular to its edge ; show that if  $\phi$  and  $\psi$  be the angles of incidence and emergence, and  $i$  the refracting angle of the prism, the deviation is equal to

$$\phi \pm \psi - i, \text{ or } \psi - \phi - i,$$

according as the incident ray makes an acute angle with the face of the prism towards the thicker end or the edge. Under what convention will these expressions for the deviation be all represented by  $\phi + \psi - i$ , and with this convention for what value of  $\phi$  will  $\psi$  change sign ?”

On the third day the same, except that in the afternoon there were twenty-two questions, of such a nature and complexity that it appears utterly impossible that the demonstrations to one half of them could even be copied out by the quickest stenographer.<sup>11</sup>

Five more days were similarly occupied, but it would scarcely interest the general reader to follow the course minutely.

Meanwhile the classical tripos requires the translation of Greek and Latin into English, and *vice versa* ; the conversion of a passage from Marlowe's “Queen of Car-

thage" into Greek Lambics and another into Greek Hexameters ; a passage from Cowley, into Latin Hexameters ; four verses of the "Hymn to Light," into Latin Lyrics, &c., &c. ; and an elaborate series of historical and philosophical questions.<sup>12</sup>

These are mental gymnastics of no light order, and he who can come out of the ordeal unscathed and with an honorable position, has shown himself, *ipso facto*, to be *great*. It has been very frequently urged that those men who have attained the highest University rank have rarely been distinguished in after life. We are not prepared to disprove a statement which has been reiterated until it has almost become a recognized dogma ; but neither can we receive it as wholly true. Are we mistaken in supposing that Sir R. Peel was almost at the top of the academic tree ? And probably many other of our ablest statesmen, could we but refer conveniently to their earlier history. Yet even supposing it to be the case, that the world hears little subsequently of the senior wranglers and the "double first" men, is it necessarily because health and intellect are ruined ? Rather may we suppose that the studious and literary habits acquired during years of close application have induced tastes and feelings utterly opposed to the wear and tear of public life ; and that the men thus trained prefer rather to occupy themselves with the facts and speculations of nature and philosophy, than to take part in the troubrous warfare of politics or polemics.<sup>13</sup>

Are these requirements then, as has been so often said, too severe ? Of the most weighty order they are certainly ; but we must hesitate before pronouncing them to be too much so. What indeed is a test of this nature intended for, if not to distinguish between man and man ? Crowds of men could pass through a lighter ordeal with perhaps equal merit and distinction ; and from the nature

of things it is inevitable that the severity of the test must be increased till the few can be sifted from the many. Moreover, we must remember that the honor is for those who *can* fulfil the conditions, not for those who *cannot*; — it is for the purpose of selecting the strong and clear-minded man and the one who is capable of much hard work; for such men are wanted in the world, as well as the strong-limbed and hard-handed. All minds cannot accomplish the same feats, no more than all physical frames can rival the material development of a Lydon or a Tetraides. The following is from a recent leader in the *Times*, and well illustrates the various kinds of work and constitution: —

“ There is perhaps no man living of whom more feats of labor and triumphs over the frail *physique* of humanity are recorded than of Lord Brougham. Legends of this sort have gathered round him like a Hercules. There is a legend that he once worked six continuous days — i. e. 144 hours — without sleep, that he then rushed down to his country lodgings, slept all Saturday night, all Sunday, all Sunday night, and was waked by his valet on Monday morning to resume the responsibilities of life and commence the work of the next week. A man must, of course, have a superhuman constitution who can do, we will not say this particular feat, which is perhaps mythical, but feats of this class, and probably the greatness of our great men is quite as much a bodily affair as a mental one. Nature has presented them not only with extraordinary minds, but — what has quite as much to do with the matter — with wonderful bodies. What can a man do without a constitution, — a working constitution? He is laid on the shelf from the day he is born. For him no munificent destiny reserves the Great Seal, or the Rolls, or the Chief Justiceship, or the leadership of the House of Commons, the Treasury, or the

Admiralty, or the Horse Guards, the Home Office, or the Colonies. The Church may promote him, for it does not signify to the Church whether a man does his work or not, but the State will have nothing to do with the poor constitutionless wretch. He will not rise higher than a Recordership or a Poor-Law Board. 'But,' somebody will ask, 'has that pale, lean man, with a face like parchment, and nothing on his bones, a constitution?' Yes, he has,—he has a working constitution, and a ten times better one than you, my good friend, with your ruddy face and strong muscular frame. You look, indeed, the very picture of health, but you have, in reality, only a sporting constitution, not a *working* one. You do very well for the open air, and get on tolerably well with fine, healthy exercise, and no strain on your brain. But try close air for a week,—try confinement, with heaps of confused papers and books of reference, blue books, law books, or despatches to get through, and therefrom extract liquid and transparent results, and you will find yourself knocked up and fainting, when the pale lean man is—if not 'as fresh as a daisy,' which he never is, being of the perpetual cadaverous kind—at least as unaffected as a bit of leather, and not showing the smallest sign of giving way. There are two sorts of good constitutions,—good idle constitutions, and good working ones. When Nature makes a great man, she presents him with the latter gift. Not that we wish to deprive our great men of their merit. A man must make one or two experiments before he finds out his constitution. A man of spirit and metal makes the experiment, tries himself, and runs the risk, as a soldier does on the field. The battle of life and death is often fought as really in chambers or in an office as it is on the field. A soul is required to make use of the body, but a great man must have a body as well as a soul to work with.

Charles Buller, Sir William Molesworth, and others are instances of men whose bodies refused to support their souls, and were therefore obliged to give up the prize when they had just reached it. And how many hundreds, or thousands, — if one did but know them, — perish in an earlier stage, before they have made any way at all, simply because, though they had splendid minds, they had very poor bodies! Let our lean, cadaverous friend, then, when the laurel surmounts his knotty parchment face, thank Heaven for his body, which, he may depend upon it, is almost as great a treasure as his soul. Nature may not have made him a handsome man, but what does that signify? She has made him a strong one."

With the examples already noticed, and many others to which we shall have occasion to refer, before us, we do not hesitate to express again our opinion that, the effects of mental application, even of a severe character, are not in themselves so generally serious as it is now the fashion to consider them ; and that the greater part of the evils which follow head-work are due to secondary causes, against *some* of which at least it is easy to guard.

The first of these which we shall allude to is the too sudden adoption of extreme studious habits. A man who has for some time neglected his studies finds himself unprepared as the time of examination approaches ; at once he changes all his habits, applying himself the greater part of the day and night to work. Naturally enough, the system rebels against this abuse. The muscular tissue will not bear such treatment ; let him try to walk ten or twelve hours in one day without training, and gradually increasing the amount of exercise ; and he will be most painfully reminded that organization has its laws, which cannot be violated with impunity. The brain tissue cannot be expected to be *more* enduring, or

*more* tolerant of such liberties, than this ; let us but treat it as we would any other organ, then we shall find it as ready to act, and its actions as little hurtful or painful as those. The mind must be *gradually* inured to labor, and then, instead of an enfeebled palsied development, we may hope to become able to perform mental athletics to almost any extent without danger, and with ease and profit. It is a most common mistake, in considering the mind as immaterial, to lose sight of this most important fact, that it *acts always* and *exclusively* through the medium of a material tissue ; which being, on the one hand, subject to an immaterial essence, does not, on the other, thereby lose its relations to the material organism of which it is an important part.

Another source of evil is the neglect of the corporeal requirements for a great number of hours consecutively. It is almost certain that the same amount of work which often proves injurious by its continuity, might be achieved with ease, if it were divided by *short* intervals of rest and refreshment. We appeal to the experience of all students, if during their earlier efforts Nature did not give broad hints of requiring repose and restoratives ;—the stomach asserts its right to food at proper intervals, but it is put off, — “ Go thy way for this time ; when I have a convenient season . . . . ” ; then when the exhausted powers refuse any longer to work without fuel, the meal is but a business to be accomplished as speedily as possible ; the food is swallowed unmasticated, and the stomach, loaded perhaps with a mass of indigestible material, is further impeded in its operations by the immediate resumption of a cramped, constrained, and compressed attitude. Indigestion with its thousand sons is the natural result. Then the head aches, and its hint is evaded by a wet towel, and perhaps an irritating stimulant, as a cup of strong tea or coffee ; under the influence of which, tem-

porary power, or a semblance of it, is regained. The weary eye, the aching limb, the general febrile condition,— all these are disregarded ; day by day the same process is repeated ; until the wonder is, not that the brain gives way at length, but that it has held out so long,— longer, we venture to say, as an ordinary rule, than any other organ would have done under an equivalent amount of ill-treatment. Yet in all this, the fact of mental labor simply is not more to be blamed than is commerce for the great number of deaths brought about by the all-absorbing desire of gain, the *auri sacra fames* which operates in precisely the same *secondary* manner upon the health and character.

The neglect of fresh air, regular exercise, and early rising, enters into the same category of the secondary causes.

Yet there are other conditions attendant too often upon a literary life, which are inherent in our nature, and in the existing order of our social arrangements, which exert a most important and gloomy influence upon the reaction of mind upon the body ; such are the co-operation of poverty, of wearing anxiety, of the depressing passions and emotions generally ; and finally, in an overwhelming majority of cases, the pre-existence of elements of degeneracy and disease in the organism.

“ Poverty,” says old Burton, “ is the muse’s patrimony ; and as that poetical divinity teacheth us, when Jupiter’s daughters were each of them married to the gods, the Muses alone were left solitary, Helicon forsaken of all suitors, and I believe it was because they had no portion.”

“ Calliope longum cœlebs cur vixit in ævum ?  
Nempe nihil dotis, quod numeraret, erat.”

Literature is a “good staff but a bad crutch,”— fascinating, cheering, and enlivening, tending to promote life,

health, and an equable mind in those who pursue it for pleasure ; but woe to those who are dependent upon their brains for daily bread, — thrice woe, if others are dependent upon them. In straitened circumstances, which preclude the possibility of obtaining almost even the necessaries of life, — these only to be got by unremitting toil, — under the stern necessity for doing so much brain-work in so many hours, — for coining, in short, so much nerve-tissue into so much, or rather so little, money, — pale faces around him asking for bread and shoes, — a partner of his woes vainly trying to conceal that she has not wherewithal to procure the day's dinner, — who can wonder that, under privation and misery such as this, the powers fail ? — who can wonder, or who can venture to blame him, if he sometimes looks forward to the coming of the "Pale Phantom" with something of hope ? — who dare but veil his face and pity him if he in some dark moment courts his coming ? And when, having to the end kept his faith in his Maker's justice, and fought his good fight, he hears a voice saying, "Well done, good and faithful servant," shall we then wonder that he can willingly leave wife and child, to be at rest ?

The presence of the seeds of disease and degeneration in the system has already been noticed as a fruitful source of the deaths that so often occur apparently under the influence of studious habits. If these co-operate with the last-mentioned class of influences, the lethal effects will be much more rapid : then early death, or a life of wretchedness often terminated by suicide, is an almost necessary result.

These are sad but apparently inevitable consequences of the conditions of society and of our race. There is, and ever will be, a loud demand for intellect and its labors,<sup>14</sup> — there exist, and ever will, poverty, and wretchedness, and disease ; — in the exhaustless combi-

nations of society these will at times become associated ; doubtless for wise and benevolent purposes these things are appointed as amongst our probation experiences ; it is not our province to attempt here to " vindicate the ways of God with men " ; and an investigation into the proximate causes of these evils would lead us into the fathomless abyss of an inquiry into the origin of evil. We turn to more practical points.

As there are conditions of depression and deterioration in the system which preclude the possibility of long-continued mental labor with impunity, there is, on the other hand, a hardy, vigorous, excited state of rude health, which, so long as it lasts, is as great a barrier to successful hard work. It is not long since we saw a hard-working student of good sound constitution, who had taken the relaxation of a Continental tour for a few weeks, and who complained on his return that he could not work,—his body was too vigorous. Again, the overworked body reacts as powerfully upon the mind as the overstrained mind does upon the *physique*; hence the toils and anxieties of an arduous professional life too frequently incapacitate the man of moderate powers for any striking intellectual efforts.

It is necessary and useful to inquire what classes of temperament are the best fitted for mental labor, and the most likely to produce satisfactory results. We say, without much hesitation, the Phlegmatic and the Choleric.

Müller, who takes a mental and metaphysical, rather than a corporeal, view of the various temperaments,<sup>15</sup> describes the Phlegmatic as one whose "mental strivings or emotions are neither intense nor enduring." "In persons of this temperament, ideas are conceived with as much rapidity as in others, and there may be the same powers of mind as in other temperaments. When the

intellectual faculties are good, this temperament will render a person capable of more difficult acts, and successful in a more extraordinary degree, than were his impulses rendered stronger by a more passionate temperament" (e.g. the sanguine or melancholic). "Such a person, whose mental strivings or emotions are not violent, remains cool and undisturbed, and is not drawn away from his determined course to the performance of acts which he would regret on the morrow; he is more sure and trustworthy than persons of an opposite temperament, and his success more to be depended on: in times of danger, and in moments of importance, when good judgment, calculation, and reflection, rather than quick action, are needed, his powers are all at his command. When rapid action is required, the phlegmatic person is less successful, and others leave him behind; but when no haste is necessary, and delay is admissible, he quietly attains his end, while others have committed error upon error, and have been diverted from their course by their passions."

In the Melancholic and the Sanguine, the chief tendencies of the mind are to the feeling of pain in the former and pleasure in the latter. The Melancholic person suffers impediments to depress and dishearten him, and a corresponding effect is produced on the physical frame. The Sanguine is quick to conceive, but not stable enough for execution; full of purpose, but fickle and volatile in performance. The system is more formed for activity than for study.

The Choleric has not the indifference of the Phlegmatic, but compensates for this want by the intensity and durability with which he can act. His powers of reflection are less, but his action is prompt, decided, and unhesitating. He has a powerful will, and is not given to failure where his mind is once fixed on success. Un-

der the influence of "ambition, jealousy, revenge, or love of rule," his powers seem to have no limits.

The nearer is the temperament, then, to the sanguine or the melancholic, the more care will be required in the adoption of intensely studious habits ; whilst the choleric and the phlegmatic person may with comparative safety, and with ordinary regard to the rules of hygiene, follow the bent of his inclinations ; the one, because his constitution is specially adapted to quiet and sedentary pursuits ; the other because his will is sufficiently powerful to govern the functions.

But it is time to inquire whether a negative defence of mind is all that can be brought forward, or whether there are not positive advantages and conservative influences attendant upon mental labor which tend to ameliorate the evils of temperament and constitution, and to prolong life. It is a matter of daily experience, how powerful is the influence of mental application in relieving bodily pain ; how pre-eminently successful it is in soothing the ruffled, troubled spirit, and in softening the asperity of corroding anxiety and care. If the student be poor, his books are his riches ; and whilst living and communing with sages and philosophers, he has no troubles about the state of the funds or the rates of discount. If he be rich, his studies are an omnipotent resource against *ennui*, and will (if aught can do so) prevent that burning desire for *more* which riches so often bring with them.

But mental occupation has a more direct and specific influence upon certain hereditary maladies, of which we may adduce some instances. Burton, himself addicted to the disease, in his "Anatomy of Melancholy," strongly recommends study as a remedy ; and by the catalogue which he gives of things to be inquired into, he evidently does not consider that a man need limit himself. Find-

ing his health and mind failing, he took to writing this work, — a perfect miracle of learning, — and doubtless by its assistance he lived to the age of sixty-four. Poor Cowper's melancholy was greatly relieved for a considerable time by the writing of "The Task." With the inherent vices of his constitution, and his tendency to the worst form of hypochondria, it is very doubtful whether, without mental labor, sometimes of a severe and almost compulsory character, he would have lived to the verge of seventy. Byron found a necessity for writing to preserve the integrity of his mind. "I must write to empty my mind, or I shall go mad." Accumulated instances would add nothing to the force of the argument; but no one who has suffered in mind or body, and has had resolution to try severe study as a remedy, will doubt its efficiency.

Not long ago a friend reviewed with us the names of the six or eight upper wranglers for the last twenty years. With *very* few exceptions, these and nearly all the "double first" men are alive and well at the present time. A stronger proof could scarcely be imagined that even excessive brain-work has little or no destructive influence upon life or reason; if, indeed, it does not compel us to recognize its directly *conservative* tendency. Contrast with this the effect of hard bodily training, as manifested in *boating*. We have complete and reliable information as to the history of two boats' crews of picked men, within the last few years, not one of whom is now alive. Such havoc was surely never experienced amongst *mental athletes*.

Mr. Maclaren, of the Gymnasium, Oxford, takes a very sensible view of this subject: "There is no error more profound, or productive of more evil, than that which views the bodily and mental powers as antithetical and opposed, and which imagines that the culture of the one

must be made at the expense of the other. The truth is precisely the reverse of this. In the acquirement of bodily health, *mental occupation is a helpful, indeed a necessary, agent.* And so impressively has this been proved to me, that in cases where the acquisition of bodily health and strength was the all-in-all desired by the parent, and the one thing longed for by the child (and in some cases almost despaired of by myself), I have been careful to allot and mark out a proportion of mental with bodily occupation.”<sup>16</sup> Dr. Madden also observes, that “it may be truly said, without any hyperbole, that every pursuit which ennobles the mind has a tendency to invigorate the body, and by its tranquillizing influence, to add to the duration of life.”<sup>17</sup>

Let us now inquire what testimony history bears to the longevity of men whose lives have been essentially intellectual. Some objections may be made to this course of investigation ; thus we can only quote the most remarkable instances ; — we cannot in many cases say how much of the life was purely *studious*, — we cannot, in our limits, review the labors of these men, — we cannot enumerate those who died young, nor still less can we estimate how many, who would otherwise have been great as these, have failed in physical strength. With all these limitations, we may still hope, by a cursory glance at names which have marked epochs in philosophy and literature, to arrive at some idea of the influence of life devoted to thought rather than to action ; and also to prove, by positive instances, that there is nothing in the most intense application which must *necessarily* tend to shorten life, seeing that many of the most laborious men have been octo- and nono-genarians, and even centenarians.

M. Tissot states that Gorgias, the rhetorician, lived to the age of one hundred and eight years, “without

discontinuing his studies, and without any infirmity." Isocrates wrote his "Pan-Athenæai" when he was ninety-four, and lived to ninety-eight. The above writer also mentions the case of "one of the greatest physicians in Europe, who, although he had studied very hard all his lifetime, and is now almost seventy, wrote me word not long since that he still studied generally fourteen hours every day, and yet enjoyed the most perfect health."

Epimenides, the seventh of the "wise men," lived, it is supposed, to the age of one hundred and fifty-four. Herodicus, a very distinguished physician and philosopher, the master of Hippocrates, lived to the age of one hundred. Hippocrates himself, whose genuine writings alone would be sufficient to testify to a life of arduous study, lived to the age of ninety-nine. Galen wrote, it is said, three hundred volumes ; what now remains of his works occupy, in the edition of 1538, five folio volumes. He lived to near one hundred years. Lewis Cornaro wrote seven or eight hours daily for a considerable period of his life, and lived to the age of one hundred, in spite of a feeble constitution originally.

Theophrastus wrote two hundred distinct treatises, and lived to the age of one hundred and seven. Zeno, the founder of the Stoic school, lived to the age of ninety-eight years ; and, in the full possession of his faculties, then committed suicide, having received, as he supposed, a warning by a wound of the thumb that it was time for him to depart. Democritus was so devoted to study and meditation that he put out his eyes, it is said, that external objects might not distract his attention. He died aged one hundred and nine years. Sophocles died aged ninety-one. Xenophon, Diogenes, and Carneades each lived to the age of ninety. Varro wrote five hundred volumes, and lived to eighty-eight years. Euripides

died aged eighty-five ; Polybius, eighty-one ; Juvenal, above eighty ; Pythagoras, eighty ; Quintillian, eighty. Chrysippus died of laughter, at eighty. The poet Pindar died aged eighty ; Plato, aged eighty-one. Socrates, in the full possession of his faculties, was judicially murdered at seventy-one. Anaxagoras, to whom we have before alluded, died at seventy-two. Aristotle died at sixty-three. Thucydides was eighty.

It would be difficult to select twenty-five names which exerted a much greater influence upon literature, philosophy, and history than these in old times. Many of them are known to have been most voluminous writers, many of them most profound thinkers. These were not the days of handbooks and *vade-mecums* ; those who wanted information or mental cultivation had to work for it. Yet the average age of these twenty-five men is exactly ninety years. It is much to be questioned whether the united ages of twenty-five of the most distinguished farmers that the world has ever produced would amount to two thousand two hundred and fifty years. The list might easily be enlarged greatly by such men as Seneca and Pliny, who came to untimely deaths by accident or tyranny, and who promised to live as long as the oldest, in the course of nature.

We cannot refrain from quoting some remarks upon the labors of the old commentators, which appeared in an amusing paper in *Chambers's Journal* for October, 1857, before passing in review the ages of some of the most distinguished : —

"Homer says that it would take nine men of his degenerate day to lift a stone thrown by a single warrior of the heroic ages. We know not how many men of our own time it would take to equal the labor of our commentator, — certainly not less than a dozen. In truth, his were the heroic days of literature. See how

the pile of manuscript grows under his indefatigable fingers! If he has sat at work less than sixteen hours in the twenty-four, he considers, like Titus, that he has lost a day. ‘Fits!’ says Bernard Lintot, in Pope’s squib against Dennis,—‘a man may well have fits and swollen legs who sits writing fourteen hours a day.’ Alas! the degenerate days had already set in; in the time of Bernard Lintot our commentator sat writing for sixteen hours, for six months in succession, without having fits or swollen legs. There was a time when he only allowed himself one night’s rest out of three. He was warm with youth in those days, and found that he had gone too far; there are stones too heavy even for Homeric heroes. No wonder that piles of folios grew out of his labors.”

Yet these old writers, commentators, and others were apparently a hardy race,—they were generally long-lived. Beza, the severity of whose enormous labors might be supposed to be aggravated as to the results by the acrimonious controversies in which he was engaged, lived in the perfect enjoyment of his faculties up to the age of eighty-six. The learned Richard Bentley died at eighty-one. Neander was seventy-eight; Scaliger, sixty-nine; Heyne, eighty-four; Parr, eighty; Pighius, eighty-four; Vossius, seventy-three; Hobbes, ninety-one,—at death.

Dr. Madden, the able author of the “Infirmities of Genius,” has constructed some most instructive tables relative to the longevity of men distinguished for their intellectual pursuits. He says that each list contains twenty names, in which “no other attention has been given to the selection than that which eminence suggested, without any regard to the ages of those who presented themselves to notice.”

An analysis of the tables gives the following averages of life for the various classes:—

	Aggregate years.	Average.
Twenty natural philosophers . . . . .	1504	75
Twenty moral philosophers . . . . .	1417	70
Twenty sculptors and painters . . . . .	1412	70
Twenty authors on law, &c. . . . .	1394	69
Twenty medical authors . . . . .	1368	68
Twenty authors on revealed religion . . . . .	1350	67
Twenty philologists . . . . .	1323	66
Twenty musical composers . . . . .	1284	64
Twenty novelists and miscellaneous authors	1257	62 $\frac{1}{2}$
Twenty dramatists . . . . .	1249	62
Twenty authors on natural religion . . . . .	1245	62
Twenty poets . . . . .	1144	57

This list does not by any means give too high an average of life for literary characters. Many of the oldest are omitted from the calculation, because, though equally laborious, their eminence was not quite so great; and, again, many are inserted because eminent, who died young, obviously not from causes connected with mental application. This is particularly illustrated among the poets by the cases of Byron and Burns, whose deaths certainly were not justly to be attributed to the nature of their mental habits. Amongst artists, also, Fuseli (eighty-four), Nollekens (eighty-six), Kneller (seventy-five), and Albert Durer (eighty-seven), are not mentioned. M. Lordat, in his "Mental Dynamics," gives many remarkable instances of intellectual pursuits being carried on to an extremely advanced age, — "for instance, M. des Quersonnières, one hundred and sixteen years of age, now residing in Paris, an accomplished poet, remarkable for his powers of conversation, and full of vivacity." He mentions also another poet, M. Leroy, aged one hundred years. Fontenelle, considered the most universal genius that Europe has produced, for forty-two years Secretary to the Academy of Sciences in Paris, lived with unimpaired faculties to the age of one

**hundred years.** Father Sirmond, called by Naudé "an inexhaustible treasury of ecclesiastical lore," lived to the age of ninety-three. Hutton, the learned geologist and cosmogonist, died at ninety-two.

We will now give a table of distinguished men, with their ages, independent of classification or chronology,—such names as are sufficiently known to the world to preclude the necessity of giving any account of their labors:—

	Age.		Age.
Bacon (Roger)	78	Herschel	84
Buffon	81	Laplace	77
Copernicus	70	Linnæus	72
Galileo	78	Metastasio	84
Lowenhoeck	91	Milton	66
Newton	84	Bacon (Lord)	65
Whiston	95	Hobbes	91
Young	84	Locke	72
Ferguson (Adam)	92	Stewart (D.)	75
Kant	80	Voltaire	84
Reid (T.)	86	Cumberland	80
Goethe	82	Southern (Thomas)	86
Crebillon	89	Coke (Lord)	85
Goldoni	85	Wilmot	83
Bentham	85	Rabelais	70
Mansfield	88	Harvey	81
Le Sage	80	Heberden	92
Wesley (John)	88	Michael Angelo	96
Hoffman	83	Handel	75
Pinel	84	Haydn	77
Claude	82	Ruysch	93
Titian	96	Winslow	91
Franklin	85	Morgagni	89
Halley	86	Cardan	76
Rollin	80	Fleury (Cardinal)	90
Waller	82	Anquetil	84
Chalmers	83	Swift	78
South (Dr.)	83	Watts (Dr.)	74
Johnson (Dr.)	75	Watt (James)	83
Cherubini	82	Erasmus	69

This list is taken entirely at random, and might be almost indefinitely enlarged ; but these illustrations suffice.

There are certain practical deductions obviously to be drawn from the details and arguments that have been brought forward.

1. Devotion to intellectual pursuits and to studies, even of the most severe and unremitting character, is not incompatible with extreme longevity, terminated by a serene and unclouded sunset. Dr. Johnson composed his "Dictionary" in seven years ! And during that time he wrote also the Prologue to the opening of Drury Lane Theatre ; the "Vanity of Human Wishes" ; the tragedy of "Irene" ; and the "Rambler" ; — an almost incomprehensible effort of mind. He lived to the age of seventy-five. When Fontenelle's brilliant career terminated, and he was asked if he felt pain, he replied, "I only feel a difficulty of existing."

2. Mental application is a powerful remedy in diseases both of body and mind ; and its power as a remedy is proportionate to its intensity as a pursuit.

3. The emotions, especially those of a depressing kind, as anxiety, fear, &c., have a remarkable influence in giving a tone to, and intensifying the morbid effects of, excessive mental labor. Yet in some cases, as in those of Byron and Cowper, the best and only resource against despair is found in composition.

4. The turmoils of active life do not appear to render intellectual labor more injurious to the system ; possibly here also the influence may be counteracting. Milton, the Secretary to the Commonwealth, in times when men lived years in months, — blind and in domestic discomfort, writing his immortal poems ; John Wesley, persecuted and almost an outcast from his former friends, — in "labors more abundant," — denying him-

self natural rest and refreshment, yet acting with mind and body with unparalleled energy ; Voltaire, the apostle of infidelity, at war with more than the whole world ; Luther, hunted by principalities and powers like a wild beast,—these and a cloud of others warred with the existing order of things, and remained masters of themselves and their mental powers to a ripe old age.

5. The injurious effects of mental labor are in great measure owing —

To excessive forcing in early youth ;

To sudden or misdirected study ;

To the co-operation of depressing emotions or passions ;

To the neglect of the ordinary rules of hygiene ;

To the neglect of the hints of the body ; or

To the presence of the seeds of disease, degeneration, and decay in the system.

6. The man of healthy phlegmatic or choleric temperament is less likely to be injured by application than one of the sanguine or melancholic type ; yet these latter, with allowance for the original constitution, may be capable of vast efforts.

7. The extended and deep culture of the mind exerts a directly conservative influence upon the body.

Fellow-laborer ! one word to you before we conclude. Fear not to do manfully the work for which your gifts qualify you ; but do it as one who must give an account both of soul <sup>18</sup> and body. Work, and work hard, whilst it is day ; but the night cometh soon enough, — do not hasten it. Use your faculties, use them to the utmost, but do not abuse them, —make not the mortal do the work of the immortal. The body has its claims, it is a good servant ; treat it well, and it will do your work ; it knows its own business ; do not attempt to teach or to force it ; attend to its wants and requirements, listen

kindly and patiently to its hints, occasionally forestall its necessities by a little indulgence, and your consideration will be repaid with interest. But task it and pine it and suffocate it, make it a slave instead of a servant ; it may not complain much, but, like the weary camel in the desert, it will lie down and die.

V.

## ILLUSIONS AND HALLUCINATIONS.

PROBLEM : *Under what conditions are our Senses reliable or unreliable witnesses ?*

THERE is no form of belief so deeply rooted in man's nature, so widely spread over his entire history in time and space, so apparently necessary to his very being, as a conviction of the existence of an unknown and invisible world, capable of signalizing its presence by becoming at certain times visible and palpable. There is probably no people who have not traditions of this nature, — no form of religion untinctured with some such belief. The savage who dreams of the great Spirit and boundless hunting-grounds of another life ; the man of the Middle Ages who knelt at the entrance of the purgatory of St. Patrick ; the Arab who wanders amid the enchanted palaces of the *Thousand and One Nights* ; the Hindu absorbed in the incarnation of Brama ; the inhabitant of the civilized world who in public believes in nothing, and consults the pythoness or fortune-teller in secret, or seeks for revelations of the future in magnetism : all obey the same law of necessity, — that of believing in something.

All history speaks of this, from the earliest times of which we have any record. The writer of the article "Mythology," in the last edition of the "Encyclopædia Britannica," indeed speaks of a time when fable did not, in fact could not, according to his views, exist ; for

"fables are always *tales of other times*, but at this period (the earliest and most unpolished stage of society) *other times* did not reach far enough backward to afford those fruits of the imagination sufficient time to arrive at maturity. Accordingly we find that both the Chinese and Egyptians, the two most ancient nations whose annals have reached our times, were altogether unacquainted with fabulous details, in the most early and least improved periods of their respective monarchies." Whence he somewhat hastily concludes that "all was genuine unsophisticated truth." If this were so, we should hesitate to call such a condition a *least improved* one.

How much of the ancient Greek mythology was poetry, and how much may be considered to have embodied the belief of the people, cannot of course be decided. Comprehensive enough it certainly was, providing spirits for all possible contingencies. Besides the endless train of gods and goddesses, demigods and heroes, of nymphs and satyrs, every grove and tree had their dryads and hamadryads, every mountain its oreads. The seas swarmed with nereids and oceanides, and every fountain had its naiad. Cities, streets, and households, all had their tutelary deities, their penates, and their lares. These last-mentioned spirits are especially interesting, inasmuch as they embody a favorite belief in all ages and amongst all people, that the spirits of the departed are permitted to linger amongst the scenes where they dwelt in life, for purposes good or evil, according to their former nature, but most frequently for protection. All these, from Jupiter downwards, were visible on occasions to their believers, — as visible as the fairies of later times.

It would appear that the early fathers of the Church in some measure believed in the existence of these spirits, which they considered to be devils, —

"Powers that erst in heaven sat on thrones,"

but now cast out, and wandering through the earth, deluding men and inducing them, —

“ Devils to adore for deities :  
Then were they known to man by various names  
And various idols through the heathen world.”

Although Paganism has long ceased to be the belief of civilized nations, having fled before the power of Christianity, yet many of its superstitions have descended even to our own times, intermingled with the religion which was supposed to have superseded them. Of this mixture many singular instances are met with in the *cultus* of some northern European nations, to quote which would lead us too far from our subject. But the nymphs, satyrs, dryads, &c. of old times, are by no means indistinctly represented in more modern ones by the fairies, elves, sprites, brownies, kelpies, and hobgoblins generally, which not long ago were matter of all but universal belief. The *Robin Goodfellow* in England, the *Brownie* in Scotland, the *Leprochaune* in Ireland, the *Kobold* in Germany, the *Nis* in Denmark, the *Tont* in Sweden, the *Lutin* or *Gobelín* in France, are all one and the same object of belief, having a representative in almost every known country ; to disbelieve in the existence of which would be to discredit and deny the positive sensory evidence of thousands, who are perfectly familiar with all his works and ways, as well as his personal appearance, habits, and customs !

We of the Anglo-Saxon race in the nineteenth century are wiser, and chiefly believe, as M. Boismont<sup>1</sup> insinuates, in nothing. Yet there are millions who profess to believe in direct communion with the spirit-world on even the most trivial occasions ; who listen with awe to the rappings from invisible knuckles ; who ponder with something akin to reverence over the weary platitudes, scrawled in wretched prose or doggerel verse by spirit

hands, supposed to belong to the mighty dead ; who become by hundreds the inhabitants of lunatic asylums at the apparition of childlike spirits' hands. Even amongst those who are enlightened enough to recognize all this as deception and imposture, or involuntary delusion, how comparatively few there are who, after summing up their disbelief in all spiritual communications, will not add, somewhat thoughtfully, "And yet I remember—" and proceed to relate some strange event either in their own lives, or as having occurred within the sphere of their immediate acquaintance, supported by credible witnesses ; some appearance, some sound, some warning sensation or emotion, not explicable, according to their view, by natural causes.

I am not about to enter into, nor offer any opinion upon, the broad question concerning the possibility of direct intercourse between ourselves in these days and the spiritual world, in which so many piously believe. I do not propose even to discuss the entire theory of belief in the supernatural. My object at present is simply to open out and investigate a curious chapter in mental history, — that relating to Illusions and Hallucinations ; a due and candid consideration of which will indicate clearly the source of many of the so-called apparitions which have become matters of history, as well as of constant social discussion. Singular phenomena indeed it will present to us,— to see what no other eye can see ; to hear what none other can hear ; to be convinced of the reality of sensations that appear to others incredible : surely these things are worthy of careful investigation. With this in view I propose, after defining terms, to bring forward some of the most carefully selected examples, and from a consideration of them to endeavor to arrive at their causes and nature.

Without attempting to be too philosophically accurate

in definition, we understand by Illusion, *a false appreciation of a real sensation*; by Hallucination, *a projection externally of an inward conception*, in other words, *a subjective sensation*. The one is a mental or cerebral production purely, having no external object for its foundation; the other is an error of reasoning or judgment, exercised upon some actual entity. Thus the timid man who sees in a tree or a guide-post a robber or some supernatural being; the superstitious man who sees an army, or a legion of angels, in the clouds; the maniac who sees in his friends only demons and spectres, — all these are suffering from Illusions: whilst he who sees visions which no one around him can see; who holds conversations with the invisible living or dead, or with good and evil spirits; he who, in short, states and believes himself to be surrounded by beings, objects, or influences which have no external sign whatever, — he suffers under what we term Hallucinations. We shall be chiefly occupied with the latter order of phenomena at present; but will first, by way of illustration, give one or two familiar examples of the former.

Illusions may arise either from disorder of the senses, or from an error of judgment upon data directly derived from their evidence. Thus a person may see double, or see only the half of an object; or he may see that object distorted, or variously colored, or modified in an infinity of ways, — a most prolific source of ghost-seeing. This chiefly occurs under the influence of a predominant train of thought, an absorbing emotion, or an excited state of the imagination. One illustration will serve as the type of the whole; it is related by Dr. Ferrier in his "Theory of Apparitions": —

"A gentleman was benighted, whilst travelling alone, in a remote part of the Highlands of Scotland, and was compelled to ask shelter for the evening at a small lonely

hut. When he was to be conducted to his bedroom, the landlady observed, with mysterious reluctance, that he would find the window very secure. On examination, he found that part of the wall had been broken down to enlarge the opening. After some inquiry, he was told that a pedler, who had lodged in the same room a short time before, had committed suicide, and was found hanging behind the door in the morning. According to the superstition of the country, it was deemed improper to remove the body by the door of the house, and to convey it through the window was impossible without removing part of the wall. Some hints were dropped that the room had been subsequently haunted by the poor man's spirit. My friend laid his arms, properly prepared against intrusion of any kind, by his bedside, and retired to rest, not without some degree of apprehension. He was visited in a dream by a frightful apparition, and, awaking in agony, found himself sitting up in bed, with a pistol grasped in his right hand. On casting a fearful glance round the room, he discovered, by the moonlight, a corpse dressed in a shroud, reared against the wall, close to the window. With much difficulty he summoned up resolution to approach the dismal object, the features of which, and the minutest parts of its funeral apparel, *he perceived distinctly*. He passed one hand over it, felt nothing, and staggered back to bed. After a long interval, and much reasoning with himself, he renewed his investigation, and at length discovered that *the object of his terror was produced by the moonbeams forming a long bright image through the broken window*, on which his fancy, *impressed by his dream*, had pictured with mischievous accuracy the lineaments of a body prepared for interment. Powerful associations of terror, in this instance, had excited the recollected images with uncommon force and effect." \*

\* Ferrier, op. cit. p. 24.

Illusions of the senses are common in our appreciation of form, distance, color, and motion, and also from a lack of comprehension of the physical powers of nature, in the production of images of distant objects. A stick in water appears bent or broken ; the square tower at a distance looks round ; distant objects appear to move, when we ourselves only are in motion ; the heavenly bodies *appear* to revolve round the earth. All our readers will also be familiar with the Spectre of the Brocken, the Fata Morgana, and the Mirage, — all of which were long supposed to have a supernatural origin, until they were shown to be due to the ordinary laws of light and atmospheric influences. All these illusions are easily rectified by the judgment, and are transitory in the sane mind. Amongst the insane, mistakes of one person for another, and illusions of the most varied and perverse character, are amongst the most constant and durable symptoms of the mental disorder. The illusions that accompany many bodily disorders are so mixed up with hallucinations, that they need no separate consideration.

Of Hallucinations there are many kinds : there are some that are voluntarily producible, and some that occur involuntarily and obtrusively ; there are some that are compatible with reason, and others that either originally are, or by persistence become, incompatible with it. Of those that are compatible with reason, some are rectified by the understanding, some are not. Some occur in a state of apparently perfect health ; others are attendant upon various deranged conditions of the mental or bodily functions ; and some of the most distinctive are produced by the action of certain narcotic agents. I shall illustrate all these by a few examples.

Of the simplest and most familiar kind of hallucinations are those optical spectra producible at will by every one. If the eye is fixed for some time upon a bright

object, as a strongly lighted window, the image of that object in varying colors is visible for a long time afterwards on turning the eye towards a dark place. This is, however, purely a physical phenomenon ; we are here more especially concerned with those produced by a vivid effort of imagination, without the immediate intervention of any object. Dr. Wigan relates the history of one of our English painters, who only required one sitting from his subject to form a perfect portrait. His own account of the subsequent process was as follows :—

“ When a model was presented, I looked at it attentively for half an hour, sketching occasionally on the canvas. I had no need of a longer sitting. I put aside the drawing, and passed to another person. When I wished to continue the first portrait, I took the subject of it into my mind, I put him in the chair, *where I perceived him as distinctly as if he had been there in reality* ; I may even add, with form and color more defined and lively than in the original. I contemplated, from time to time, the imaginary figure, and set myself to paint ; I suspended my work to examine the *pose*, exactly as if the original had been before me ; *every time that I cast my eye on the chair I saw the man.*”

It would seem, however, from this and many other instances that might be quoted, that this vivid exercise of the imagination is not to be long continued with impunity.<sup>2</sup> By degrees this painter began to lose the distinction between the real and the imaginary figures, and ultimately his mind became altogether confused and overthrown. He passed thirty years of his after life in an asylum, of which period he retained little or no remembrance.<sup>3</sup> After this he resumed his art for a short time with the same skill as before ; but it was found again too exciting, and he relinquished it, after which he shortly died. It is related by Langlois, an

intimate friend of Talma, that this great actor informed him that when he entered on the stage he had the power, by force of will, to make his brilliant auditory to disappear, and to substitute skeletons for them. When his imagination had thus filled the saloon with these singular spectators, the emotion which they, his own creation, excited within him, gave to his personations such force as to produce the most striking results.

Goethe gives a singular account of his own faculty for producing voluntary hallucinations on a given theme : "When I close the eyes, on lowering the head, I imagine that I see a flower in the middle of my visual organ ; this flower does not for a moment preserve its form ; it is quickly decomposed, and from its interior are born other flowers with colored or sometimes green petals ; these are not natural flowers, but fantastic, nevertheless regular figures, such as the roses of sculptors. It was impossible for me to regard this creation fixedly, but it continued as long as I wished, without increase or diminution. Even when I figured to myself a disk charged with various colors, I saw continually born from the centre towards the circumference new forms comparable to those that I could see in a kaleidoscope." In this the result of Goethe's favorite object of research may clearly be traced.

Hallucinations that are voluntarily produced are not always dismissible at pleasure. Abercrombie, in his "Inquiry concerning the Intellectual Powers," relates the history of a man, sound apparently in mind and body, in the prime of life, who was continually besieged with hallucinations. So marked was this tendency, that if he met a friend in the street, he was never at first certain whether it was a real person or a phantom. After much attention he could observe a difference between the two, but he had generally to correct his

visual impressions by the senses of touch or sound. He had the faculty of producing these hallucinations at will, either of persons or scenes, but when once produced he could not bid them depart when he would ; and he could never tell how long they would remain. Another member of his family had the same peculiarity in a less marked degree.

But more important and more remarkable than these voluntary hallucinations are those which occur without and against the will of the sufferer, and apparently without any connection with any previous excitement of the imagination, at least as directed to any such subject. These are the veritable spectres with which many persons of sane mind in other particulars have conceived themselves to be haunted. The creation of the brain by automatic action has become a something external, so vivid and so distinct that the results have not unfrequently been tragic in the extreme. One of the most authentic, and at the same time most graphically described, of these cases, is one related by Sir Walter Scott as having occurred to a gentleman, high in judicial station, high in general estimation, of great mental powers and of sound judgment. The relator derived his information directly from the medical attendant of this gentleman, an authority whose "rank in his profession, as well as his attainments in science and philosophy, gave him an undisputed claim to the most implicit credit." He describes a long attendance upon him, fruitless in its results so far as relief to a complicated train of depressing symptoms was concerned ; with his many ineffectual attempts to elicit from his patient the hidden source of his mental sufferings, which evidently formed a considerable part of his ailment. At length, after a strong appeal to his reason, the patient with much reluctance gave an explanation :—

" 'You cannot, my dear friend, be more conscious than I that I am dying under the oppression of the fatal disease which consumes me ; but neither can you understand the nature of my complaint, and the manner in which it acts upon me, nor if you did, I fear, could your zeal and skill avail to rid me of it. . . . My case is not a singular one, since we read of it in the famous novel of Le Sage. You remember, doubtless, the disease of which the Duc d'Olivarez is there stated to have died ?' 'Of the idea,' answered the physician, 'that he was haunted by an apparition, to the actual existence of which he gave no credit, but died, nevertheless, because he was overcome and heart-broken by its imaginary presence.' 'I,' said the sick man, 'am in that very case, and so painful and abhorrent is the presence of the persecuting vision, that my reason is totally inadequate to combat the effects of my morbid imagination, and I am sensible that I am dying, a wasted victim to an imaginary disease.' "

The struggle which this gentleman had with his disease was most painful. It commenced by the apparition of a black cat, which appeared and disappeared so strangely that at last he came to the conclusion that it was no "household cat, but a bubble of the elements, which had no existence save in his own deranged visual organs or depraved imagination." This vanished, and was succeeded by the figure of a gentleman-usher, in full court costume, who went before him into every company, as if to announce him. But this figure in turn disappeared, and gave place to another, "horrible to the sight, and distressing to the imagination, being no other than the image of death itself, the apparition of a *skeleton*."

" 'Alone or in company,' said the unfortunate man, 'the presence of this last phantom never quits me. I

in vain tell myself a hundred times over that it is no reality, but merely an image summoned up by the morbid acuteness of my own excited imagination and deranged organs of sight. What avail such reflections while the emblem at once and presage of mortality is before my eyes, and while I feel myself, though in fancy only, the companion of a phantom, representing a ghastly inhabitant of the grave, even while I yet breathe on the earth? . . . . I feel too surely that I shall die the victim to so melancholy a disease, although I have no belief whatever in the reality of the phantom which it places before me.'"

Amongst other methods tried to reassure him, the physician on one occasion placed himself between the curtains of the bed, in the precise spot where the phantom appeared to be, but this was all unavailing. The unfortunate patient saw the "skull peering" above his shoulder. He resorted to many other methods, all equally unsuccessful; the patient sunk into deeper and deeper dejection, and finally "died in the same distress of mind in which he had spent the latter months of his life; and the circumstances of his singular disorder remaining concealed, he did not, by his death and last illness, lose any of the well-merited reputation for prudence and sagacity which had attended him during the whole course of his life."<sup>4</sup>

Hallucinations of a similar nature, though of milder character, and attended by less tragical consequences, are sufficiently common. I have myself met with several instances related to me by the subjects of them as mere curiosities. One elderly gentleman informed me that, when slightly indisposed, he very frequently saw the figures of three girls, dancing or still, of small size, a little behind and to the right of him. The figures were always in the same relative position to him and to

each other. Being much addicted to carving in ivory, I asked him whether these figures had any relation to any of his works in that department, but he could not trace any connection. A lady, in whose powers of observation and veracity I should place the utmost confidence, told me that, whilst lying awake one evening, after a slight but debilitating illness, she saw the figures of two children moving gently about the floor. As she knew that none could be there, she said to herself, "This is what is called an illusion"; and, after looking at them some little time, turned away her head to see if they moved with her. They did not do so; and on looking again they were gone. Another lady, suffering from an old-standing disease, but in perfect possession of faculties of more than average acuteness, often described to me the appearance of a man who used to stand in the doorway of her room. His first appearance rather alarmed her, but, by reasoning upon it, she overcame her fear, and got perfectly accustomed to it. On inquiring how she ultimately treated the apparition, she said her usual method was to turn away and fall asleep. In these two last-mentioned instances, the apparitions were in no particular to be distinguished from real objects considered as objects of sense; it was only when reason intervened that they were recognized as phantoms of a heated brain. Had there in either case been less power of thought, there would have been the foundation for a most authentic ghost story, especially if in the chapter of accidents any sinister event had followed any of these appearances. A short time ago, a lady described to me, in the calmest and most sensible manner, an hallucination to which she was subject at that time. She saw some persons frequently, who stood at some distance from her, "making faces" at her, and occasionally throwing stones. She knew it was not real, yet the sensation was so strong,

that she was occasionally obliged to go to the mirror to see whether or not the head was wounded. All this was transitory, and attendant upon a depressed state of the system generally. It passed away completely, without attaining any more serious aspect. There was not the slightest reason to suspect any voluntary misstatement. Many other instances might be adduced, but these are sufficient for the illustration of the milder yet defined form of ocular hallucination. It may be added, that young children are very subject to hallucinations of this kind, when closing their eyes before going to sleep after any excitement. They not unfrequently complain that "*things* come to them," when they attempt to go to sleep; the *things* having some relation or resemblance to the objects that have most impressed them before.

The celebrated academician, Nicolai of Berlin, has left a most interesting and instructive account of the hallucinations with which he was troubled for about two months. After some months of anxiety and indisposition consequent upon it, and immediately succeeding a quarrel, he perceived, about ten yards from him, the figure of a corpse. This continued about eight minutes, and reappeared in the afternoon, about two hours after which he perceived several other figures which had no relation to the first. When the first emotion was passed (he states), he contemplated the phantoms, recognizing them for what they were in reality, examining them with great care, and attempting to trace by what association of ideas they had presented themselves to his imagination. He could not, however, find their connection with any of his thoughts or occupations. On the next day, the figure of the corpse disappeared, but was replaced by a great number of other figures, representing sometimes friends, but generally strangers. His intimate associates but rarely appeared in the assembly, which was

chiefly composed of persons living at a distance. "I tried," he continues, "to reproduce at will the persons of my acquaintance by an intense objectivity of their image; but although I saw distinctly in my mind two or three of them, I could not succeed in causing the interior image to become exterior." These visions appeared to be as clear and distinct in solitude as in company, by day as well as by night, at home and abroad. Sometimes, when the eyes were shut, they disappeared, but not always. In general the figures, which were of both sexes, seemed to pay very little attention to each other, but walked about with a busy air, as if in a market. The remainder of the history I give in his own form:—

"About four weeks afterwards, the number of these apparitions increased; I began to hear them speak; sometimes they spoke to each other, generally to me. Their discourse was agreeable and short. Occasionally I took them for sensible and tender friends, who strove to soften my grief.

"Although my mind and body were at this period in a sound state, and the spectres had become so familiar to me that they did not cause me the least annoyance, I sought by suitable means to rid myself of them. An application of leeches was made to my head one morning at eleven o'clock. The surgeon was alone with me; during the operation the room was filled with human figures of every kind: this hallucination continued without interruption until half past four, when I perceived that the motion of the phantoms became slower. Soon afterwards they began to grow pale, and at seven o'clock they had all a whitish appearance; their movements were slow, but their forms still distinct. By degrees they became vaporous, and appeared to mix with the air, although some of their parts remained very visible for some time. About eight o'clock they were all gone,

since which time I have seen nothing of them, although I have thought more than once they were about to appear."<sup>5</sup>

In Dr. Hibbert's "Philosophy of Apparitions," he concludes that "apparitions are nothing more than morbid symptoms, which are indicative of intense excitement of the renovated feelings of the mind." Many of the instances quoted would appear to controvert this view, since the phantoms were by no means invariably *reminiscences*; in fact, more frequently they were new and strange appearances. The celebrated physiologist Bostock also opposes this opinion from his own experience. After a feverish illness, he had certain figures before his eyes continually, "upon which," he says, "as I was free from delirium, and as they were visible for about three days and nights with little intermission, I was able to make my observations. There were two circumstances which appeared to be very remarkable: first, that the spectral appearances always followed the motion of the eyes;\*" and, secondly, that the objects which were the best defined, and remained the longest visible, were such as I had no recollection of having previously seen. For about twenty-four hours I had constantly before me a human figure, the features and dress of which were as distinctly visible as those of any real existence, and of which, after an interval of many years, I still retain the most lively impression; yet neither at the time nor since have I been able to discover any person whom

\* This is by no means always the case. The appearance is often seen only in one position in the room, or even in one particular apartment; and the turning away of the head, or leaving the room, is sufficient to cause its disappearance. It is certain that, were the production of these spectral appearances well understood, their moving with the eye, or otherwise, would be an important guide to the determination of the precise seat of the hallucination, i. e. as to whether it was due to the organ of vision itself, or more deeply seated in the brain.

I had previously seen that resembled it. . . . During one part of the disease, after the disappearance of this stationary phantom, I had a very singular and amusing imagery presented to me. It appeared as if a number of objects, principally human figures and faces, on a small scale, were placed before me, and gradually removed, like a succession of medallions. They were all of the same size, and appeared to be all situated at the same distance from the face. After one had been seen for a few minutes, it became fainter, and then another, which was more vivid, seemed to be laid upon it, or substituted in its place, which in its turn was superseded by a new appearance. During all this succession of scenery, I do not recollect that in a single instance I saw any object with which I had been previously acquainted ; nor, as far as I am aware, were the representations of any of those objects with which my mind was most occupied at other times presented to me : they appeared to be invariably new creations, or at least new combinations, of which I could not trace the original materials.”<sup>6</sup>

The preceding instances relate to cases in which the abnormal impression of the vision was rectified by the understanding, and the apparition recognized for what it really was, viz. a visual hallucination. In many instances, however, the impressions so produced are not thus rectified ; and the subject of them rests in the belief that a true and supernatural apparition has been seen by him. This results from a variety of causes, such as a credulous or superstitious character, a strong predisposition to the marvellous, or a defect of analytic power ; or, on the other hand, from the coincidence in point of time, or other relations, between such apparition and certain events which it is supposed to have foreshadowed or indicated. Instances of this nature are commonly related of many illustrious and historical

characters ; amongst others, of Napoleon Bonaparte, Oliver Cromwell, Lord Castlereagh, Bernadotte, Malebranche, Descartes, Byron, Dr. Johnson, Benvenuto Cellini, Luther, Loyola, Pascal, and a crowd of others. From numbers of the ancients so visited we might perhaps select Brutus, Dion, Æneas, and, as some persons believe, Socrates. I can only briefly notice a few of these.

General Rapp relates that one night, going unannounced into Napoleon's tent, he found him in so profound a reverie that his entrance was unnoticed. After some time, the Emperor turned round, and, without any preamble, seizing Rapp by the arm, he said, pointing up into the sky, "Do you see that?" The General answered nothing, but on the question being repeated, he said he saw nothing. "What!" replied the Emperor, "you cannot see it? It is my star; it is shining there before you. It has never abandoned me; I see it on all great occasions; it orders me to go forward; and it is a constant sign of good fortune." The genealogy of this anecdote is given by M. Boismont. He learnt it from M. Amédée Thierry, whose informant was M. Passy, to whom Rapp himself had told it, — *Valeat quantum*. Of Cromwell, Denby relates that on one occasion he was laid on his bed, very much fatigued, when the curtains were drawn aside, and a woman of gigantic stature appeared to him, and prophesied his future greatness. On what authority this anecdote rests we have no information; probably it is scarcely even as direct as the last.

About and before the time of the Reformation, the belief in diabolical agency, and the constant and often visible interference of evil spirits in human affairs, was universal. "The Devil and his legions were everywhere and in everything; diabolic agency was sup-

posed to be unremitting and universal . . . . Satan's invisible world was displayed with a topographical minuteness of detail which could scarcely have proved agreeable to that great personage. The nature, history, and rank of devils were curiously inquired into, and the points of precedence in the infernal hierarchy settled to a nicety ; the various forms assumed by them in the course of their operations upon earth were fully described ; the different tests by which their presence might be detected were given with something like scientific precision ; and, what is still more extraordinary, the number of these fallen spirits was determined to a fraction . . . . At this period, accordingly, the belief in apparitions was universal, and people would have sooner doubted their own existence or identity than ventured to call in question the most grotesque fooleries which the human fancy ever imagined.\* To these superstitions it would appear that the great reformer Luther was by no means superior. He often writes of verbal contests with the Evil One, in which he generally had the best of it ; and on one occasion, "when the Tempter had intruded himself rather unseasonably, and had chosen to assume 'the glorious form of our Saviour Christ,' the Reformer, who at first expected a revelation, lost all temper as soon as he discovered the real character of his visitant, and exclaimed fiercely, 'Away, thou confounded devil ! I know no other Christ than he that was crucified, and who in his word is pictured and preached unto me' ; whereupon (he adds) the image vanished, which was the *very Devil himself.*"† Some writers will have all these histories to be merely parables and myths ; but there are some expressions in his writings which by no means admit of this interpretation. Amongst others, one passage in his treatise "De Missâ Privatâ" is very significant. "Now

\* "Encyclop. Brit.", Vol. III. p. 812.

† Ibid.

who will explain to me," he says, "how it happens that certain men are found dead in their beds? It is Satan who strangles them. Emser, Ecolampadius, and others who resemble them, have thus perished under the talons of Satan."

An analytic examination of the hallucinations of Loyola and Pascal would be interesting as supplementary to those of Luther. We should find, did our limits permit us to enter fully into the investigation, that the one fundamental law at the root of all these phenomena is this, — that *whilst it is the particular physiological or mental state of an individual that determines the occurrence of hallucinations, it is the predominant belief or superstition of the period at which they occur that determines their special character and type.* On this point M. Boismont remarks : —

"These hallucinations were, if one may so express it, in the body social, not in individuals. The character of *generality* that we observe in the aberrations of the Middle Ages was due, doubtless, to the fact that *beliefs* had absorbed *the man*; whilst free-will must necessarily cause individuality to predominate. Thus, in our own times, when personality has attained its highest development, epidemic aberrations have almost entirely disappeared, and have been replaced by others peculiar to each individual."

The other senses are also susceptible of hallucinations in the same manner as the visual. They are, however, of less *general* interest than those of the eye, chiefly for this reason, that they are most frequently associated, when at all well marked, with decided aberration of intellect. The insane murderer and suicidé have often heard voices urging them to the deed. One of the most frequent sensory symptoms of insanity is the hearing of voices plotting mischief against the sufferer,

using abusive or profane language, or threatening all manner of present and future evils. But as the great extent of the subject has compelled me to limit its consideration to only a small section, I have confined my attention chiefly to those hallucinations which appear to be compatible with a sound exercise of the intellect in all other particulars. Hallucinations of the ear frequently occur combined with those of the eye, as in the case of Nicolai already quoted ; but when pure, they are most frequently associated with some form of insanity. There is one remarkable instance, however, relating to one of the most celebrated persons of history, viz. Socrates, which I shall only passingly allude to here, but discuss fully in an Appendix to this Essay, under the title of the " Demon of Socrates."

Jerome Cardan firmly believed himself to be under the protection of a familiar spirit, under whose direction he did many important acts. He was subject to hallucinations of several of the senses ; some of them voluntary, as on one occasion he writes, *Video quæ volo, oculis, non vi mentis.* Bodin gives an account of some hallucinations of the sense of touch occurring in a person of his acquaintance, the general tenor of which bears a striking analogy to the supposed hallucinations of Socrates, inasmuch as the intimations appear to have been always warnings, and never incentives to action. Although the principal part of the phenomena related to the sense of touch, yet sight and hearing were occasionally involved. In the beginning he heard rappings at his door ; after which time, whenever he was about to do anything dangerous or improper, he felt a touch on the right ear ; and if what he was about was likely to tend to his advantage, the touch was on the left ear. The same intimations were given of the approach of any good or evil influence. On one occcation he saw on his

bed the figure of a child of marvellous beauty, clothed in white and purple, soon after which he had a great deliverance from some imminent danger. Guy Patin shrewdly suspects that all this is but a history of Bodin's own experiences.

Whilst alluding to hallucinations of the touch, we should not omit to notice an account which Berbiguière gives of his sufferings from the persecutions of the Goblins (*les farfadets*). He details their torments in three volumes, so replete with wit, good sense in other respects, and sound argument, that we should be tempted to believe the whole matter to be a solemn and elaborate joke, had it not been perfectly notorious that he did believe himself to be ever seeing and feeling the presence of these pygmy persecutors. They were perpetually coming and going over his body, and leaning upon him, to fatigue him and cause him to sit down. This went on night and day, and their weight was such as almost to stifle him. He was in the habit of catching them, and fixing them with pins to the mattress, or putting them into bottles. He saw them doing everything that was to be done, presiding over the organic processes of nature,\* ringing the bells, lighting the lamps; in short, nothing transpired without *les farfadets*. And yet, apart from

\* With regard to their occupations, he described them in a very prosaic parody on Pope's lines on the fairies :—

" Some in the fields of purest ether play,  
And bask and whiten in the blaze of day;  
Some guide the course of wandering orbs on high,  
Or roll the planets through the boundless sky;  
Some, less refined, beneath the moon's pale light,  
Pursue the stars that shoot athwart the night,  
Or suck the mists in grosser air below,  
Or dip their pinions in the painted bow,  
Or brew fierce tempests on the wintry main,  
Or o'er the glebe distil the kindly rain;  
Others on earth o'er human race preside,  
Watch all their ways, and all their actions guide."

*Rape of the Lock*, ch. i.

these delusions, Berbiguière was universally known as an amiable, intelligent, and judicious man.<sup>7</sup>

Thus it is seen that in a state of health and mental soundness the senses may be so imposed upon, with or without any existing object, that in some instances it requires the exercise of all the reasoning and analytic faculties to correct the impression ; and in others these impressions are so strong, that no suspicion of unreality ever appears to attach to them, nor can the subject of them be persuaded that they do not arise from real objects. This latter is most frequently the case when two or more of the senses are simultaneously affected by the illusion or hallucination. If only the visual faculty is involved, the ear and the sense of touch may correct the morbid fancy ; but when, as is not unfrequently the case, all these are affected, then the detection of the delusion becomes all but impossible, and, practically, is very rarely effected. The illusions and hallucinations connected with dreaming, nightmare, somnambulism, sleep, and the border-land between sleeping and waking, are too familiar to need more than a passing notice. In all abnormal states of mind also, or bodily health, there is a proclivity to hallucinations and illusions. There are hallucinations in mania and other forms of insanity, in paralysis, in delirium tremens, in hysteria and hypochondriasis, in febrile and inflammatory disorders ; in short, they may occur to complicate nearly every derangement of the organism. To enter upon these would require a volume, and it is out of our province ; they belong more to the domain of special medicine. One general remark we may make, viz. that infinite as is the variety of the phantoms that pass before the excited imagination in these affections, there is noticeable in some of them a kind of *speciality* of delusion ; thus, the hallucinations of delirium tremens almost invariably comprise one class

of delusions, that pertaining to "creeping things innumerable," and differ in almost every respect from those of simple febrile disorders on the one hand, and, further still, from those of hypochondriacal affections on the other, all of which appear to have a tendency to some typical character of their own. If it be so, that special organic changes are attended by special mental affections as manifested in these hallucinations, it may be that when, in the progress of science, these organic changes are better known and recognized, an additional clew to the mystery of idea, thought, and cerebration generally, may be found in the careful consideration and analysis of these aberrations of perception.

The hallucinations occurring in that state of the system known as ecstasy or trance are strange in every aspect, full of mystery, provided that we can place any faith in the narrators of them. The utterances under the influence of these states or visions are quoted by many writers as having been prophetic. It is necessary in general to receive these accounts with the greatest reserve. The history of one such prophecy is related by La Harpe, and its accuracy is vouched for by Madame de Genlis, the Countess Beauharnais, and other eminent characters; notwithstanding which authorities, the reader will agree with me that it is *expedient to doubt*. If I give a brief abstract of it, it is chiefly on the ground that M. Boismont brings it forward as illustrative of this part of the subject, not placing implicit faith in it himself, but considering that it does "not the less belong to history, whether we consider the rank of the personages involved, or the gravity of the events predicted."

"It seems but yesterday," says La Harpe, "yet it was at the beginning of 1788. We were at table at the house of one of our *confrères* of the Academy, *grand seigneur et homme d'esprit*. The company was large, and consisted

of all kinds of men,—courtiers, lawyers, literary men, academicians," &c. He proceeds to describe the banquet, and the lively discourse that succeeded, chiefly turning on the coming or expected Revolution. "One only of the guests took no part in these joyful anticipations ; this was Cazotte, an amiable and original man, but tinctured with the reveries of the visionaries (*illuminés*)."  
He at length spoke, and not only told the company assembled that they would certainly see this revolution, but that they would have little cause to rejoice, sketching out the fate of many there present. "You, M. Condorcet, will die on the floor of your prison ; you will die of the poison you have taken to escape the hands of the headsman, — poison which the happy season will compel you to carry about with you always." At this there was great dismay ; but they excused it, knowing "that M. Cazotte was in the habit of dreaming with his eyes open."

"But what has put these ideas of prison, headsman, and poison into your head ? What have they to do with philosophy and the reign of reason ?" "It is precisely as I tell you ; it is in the name of philosophy, of humanity, of liberty, — it is under the reign of reason that this will happen : at that time there will be no temples but those of reason in France." 'Verily,' said Chamfort, with a sarcastic air, 'you will not be a priest in that kind of temple.' 'I hope not,' he replied, 'but you, M. Chamfort, will ; and you will open your veins with a razor, but will not die for months afterwards.'

He then proceeded (so says La Harpe) to foretell the fate of Vicq d'Azyr, of Nicolai, of Bailly, of Malesherbes, of Roucher, all as they afterwards occurred ; all to happen before six years had passed. La Harpe then himself addressed Cazotte : "You relate miracles, but do you say nothing of me ?" "You yourself will then be a miracle at least as extraordinary ; you will be a Christian."

"Ah!" then said Chamfort, "if we are not to perish until La Harpe be a Christian, we shall be immortal." The history goes on to relate the prediction of the abolition of the priesthood, the execution of the Duchess de Grammont and the Royal Family, and the fate of Cazotte himself. It admits of but little comment: La Harpe died in 1803. Perhaps it only attaches to our subject by a perversion of terms; but the history is curious in any aspect, and is told in a peculiarly graphic and charming manner by La Harpe.<sup>8</sup>

Both illusions and hallucinations may appear in an epidemic form. One of the principal forms of epidemic illusion is the vision of armies in the clouds. All history abounds with instances of this nature. A curious illusion of another kind on one occasion occurred at Florence, which depended upon atmospheric causes. Great numbers of the inhabitants were collected in the principal streets of the city for some hours; they contemplated with great attention the figure of an angel floating in the air, and expected some great event to follow immediately; when it was discovered that the phenomenon was caused by a cloud covering the dome, in which was reflected the image of the golden angel surmounting the edifice, which was strongly illuminated by the rays of the sun.\* History also tells abundantly of epidemic hallucinations; the Crusades were especially rife in such portents. "Scarcely was the signal for the first crusade given than the apparitions commenced; every one recounted his visions, the words he had heard, the orders he had received. The people, the armed multitude, perceived in the air signs and portents of all kinds; but it was especially when the Crusaders had penetrated into Asia that the prodigies multiplied." They saw on all hands the saints descending and fighting for them at the

\* Ferrier, "Theory of Apparitions."

head of angelic hosts. But it is needless to multiply illustrations of this kind of epidemic.

There existed for some centuries two singular forms of epidemic hallucinations,—*lycanthropy* and *vampyrism*,—which prevailed extensively amongst great numbers of people. “The origin of lycanthropy,” says M. Boismont, “goes back to the most ancient epochs of paganism. In this illusion the unfortunate sufferers believed themselves to be changed into wolves. . . . It was especially in the fourteenth and fifteenth centuries that this singular illusion was most widely spread in Europe. The cynan-thropes and lycanthropes abandoned their dwellings to bury themselves in the forests, letting their nails, hair, and beard grow, and pushing their ferocity to such an extent as to mutilate, and even kill and eat, children that fell in their way.” Many of them confessed these things in such a manner as to indicate their insanity; but the ignorance of the times was such, that they were supposed to be in pact with Satan, and they were burned at the stake, in great numbers, as the supposed witches were.

On Vampyrism, M. Boismont remarks:—

“When a man is subjugated by superstition and terror, there are no ideas so grotesque that they may not become realities. One of the most singular aberrations of this kind is that which is known under the name of *Vampyrism*, of which we find the traces even in the Talmud. This epidemic reigned about the commencement of the eighteenth century in many parts of Hungary, Moravia, Silesia, and Lorraine. The peasants who were the subjects of it believed that after death their enemies had the power of appearing to them in various forms. Some dreamed that these malevolent spirits took them by the throat, strangled them, and sucked their blood; others believed that they really saw these cruel monsters. . . .

Mystical ideas of an expansive character, exalting the imagination, produced these various ecstasies to which we have referred ; and which had, as characteristics, celestial visions of all kinds. It is to the same influence that we must refer the apparitions and the aural illusions of the '*dance*' of the convulsionnaries of St. Medard, the ecstasies of Cevennes, the *possessed* of Loudon, and others of the same kind."\*

Epidemic hallucinations, as illustrated by the belief in witchcraft, have been so fully treated in the preceding essay that they need not be further noticed here.

In entering upon the inquiry as to the mode of production and the causation generally of hallucinations, I would premise that the existence of the *sensations* (merely as such) depends upon the well-known physiological law, that whatever impression can be produced upon the organs of the senses by *external* agency can also be produced *subjectively* by *internal* changes, i. e. changes in the organs themselves, or in those parts of the central nervous system with which they are immediately connected. Thus, light falling upon the retina produces its own specific sensation ; but this may equally be produced by distension of the bloodvessels of the retina, or some corresponding change in that portion of the brain in which the optic nerves terminate. The same applies to the ear and the other senses. Now, taking the eye for an illustration of all the senses, we know that when any given object is seen, there is an image of that object, be it tree, man, or animal, painted on the retina in rays of light ; but how that image is communicated to the brain, and from it to the sentient principle, — what is the mechanical change produced on the nerve-fibres during its transmission, — what different change is required to convey the different images of a tree or a dog to the

\* Boismont, op. cit., p. 295.

mind;— of all these things we are utterly ignorant. We know certainly that there is no image painted on the brain itself, and that it is only by a certain kind of polarity of its fibres or molecules that it is enabled to convey to the mind the idea of the particular object in question, that polarity being doubtless different in accordance with the difference of the object. We know also by abundant physiological evidence, that these variations of polarity are producible by internal as well as external causes; but as we are ignorant in the one case of the nature of that polarity which results from the presence of an external object, so in the other are we ignorant of that which is automatically excited in such manner as to produce the subjective sensation, the two being without doubt identical. What we *can* do, is to trace *some* at least of the conditions under which such polarity and such consequent sensations and hallucinations occur, which conditions are usually termed the *causes* of the phenomena.

The most frequent general organic condition of the sensory apparatus during the existence of hallucinations would appear to be one of congestion, or fulness of blood. A circumstance directly illustrative of this is related in the "Psychological Journal" for April, 1857, as occurring to the writer himself. He says:—

"We have known cases of *ghost-seeing* when wide-awake, which have been cured by leeches at the front of the forehead,— evidently indicating that they have resulted from a congestive state of the perceptive faculties. . . . We were on a visit in —, and had taken more wine than usual. It was the summer-time, and the weather very hot and dry, which combined sensations rendered us feverish and uncomfortable. . . . We went to bed, but not to sleep, and tossed and tumbled, changing our position every moment, but were too rest-

less to repose ; at length we turned towards the window and perceived between it and the bed a short, thick-set, burly figure, with a huge head, staring us in the face. Certainly nothing could appear more real or substantial, and after gazing on this monstrous creature, we put out our hand, when he opened his ponderous jaws and bit at us. We tried various experiments with the creature, — such as putting our hand before his face, which seemed to cover part of it. The longer we contemplated it, the more palpable was this figure, and the more wrathful were its features. Struck with the apparent reality of the apparition, we mechanically felt our pulse ; it was throbbing at a fearful rate ; our skin was hot and dry, and the temporal arteries were throbbing at railway speed. This physical condition had produced the phantom. We then jumped out of bed, when the spectre seemed to be nearer and of more gigantic proportions. We then threw open the window to admit a little air, sponged our head and body, and thus, by removing the cause, the monster disappeared."

Medical works abound in histories of this character, of which a number, interesting and instructive, are collected by M. Boismont. We cannot fail to be struck with the great number of hallucinations occurring in subjects who had been accustomed, from one cause or other, to periodical bleedings, and who had either from accident or design neglected the operation for some time.

One instance is here subjoined : "A man of sound mind was seated one evening in his chamber. To his great astonishment he saw the door open and one of his friends enter, who, after making a few turns round the room, placed himself before him, and looked on him intently. Wishing to receive his visitor politely, he rose ; but scarcely had he advanced a few steps, when the figure vanished ; when he recognized that it was a vision.

Soon afterwards the figure appeared again, accompanied by many other persons of his acquaintance, who surrounded him, all looking at him in the same manner. In the space of a quarter of an hour, the assembly became so numerous that it appeared as though the room would not contain them. These phantoms followed him into his bedroom, ranging themselves round the bed ; so that he had some difficulty in getting any sleep. When he awoke, they reappeared in as great numbers as before. On the morrow he consulted his physician, who remembered that he had before been bled for a cerebral congestion. Leeches were applied, and in a few hours the phantoms became less distinct, and vanished altogether by the evening." \*

But there are doubtless other physiological conditions equally potent in the production of hallucinations. Such must have been in operation in the cases of hallucination so frequent amongst the monks and hermits of old. I quote one from Mr. Lecky's "History of European Morals" in illustration : "Multiplying with frantic energy the macerations of the body, beating their breasts with anguish, the tears forever streaming from their eyes, imagining themselves continually haunted by ever-varying forms of deadly beauty, which acquired a greater vividness from the very passion with which they resisted them, their struggles not unfrequently ended in insanity and in suicide. It is related that when St. Pachomius and St. Palæmon were conversing together in the desert, a young monk, with his countenance distracted with madness, rushed into their presence, and, with a voice broken with convulsive sobs, poured out his tale of sorrows. A woman, he said, had entered his cell, had seduced him by her artifices, and then vanished miraculously in the air, leaving him half dead upon the ground ;

\* Hibbert's "Philosophy of Apparitions."

and then, with a wild shriek, the monk broke away from the saintly listeners. Impelled, as they imagined, by an evil spirit, he rushed across the desert, till he arrived at the next village, and there, leaping into the open furnace of the public baths, he perished in the flames."\*

These instances relate to centric and constitutional causation. It must, however, be mentioned that hallucinations of the most defined character often occur from causes of a transitory, trifling, and local character. In Dr. Maudesley's "Physiology and Pathology of Mind" some very interesting facts are related, showing how "irritation operating by reflex action is undoubtedly the occasional cause of sensorial disturbance." In one of the illustrative cases, violent excitement with hallucination was caused by the seeming presence of a particle of gravel under the cuticle of one toe; and in another a minute piece of glass in nearly the same position was the exciting cause. A noteworthy circumstance with regard to both these instances is, that there was no direct consciousness of the offending matter, which was only discovered by careful examination. Dr. Maudesley's fifth chapter on the Sensory Ganglia contains some most valuable and philosophical views on this and allied subjects, as well as upon perception in general.

Some collateral light may be thrown upon the physical conditions necessary for the production of hallucinations, by a consideration of the optical spectra, before mentioned, as producible at will. If we look at the sun, or any bright object, for a moment, and then close the eyes, we are conscious of a variously colored image of the object remaining for some time. This depends upon a certain change or action still persisting in the optic nerve or ganglia. Suppose this same change or action to be produced by internal causes, without the interven-

\* Vol. II. p. 126.

tion of an external object, and we have the production of an hallucination.

The determining causes of hallucinations naturally divide themselves into two classes, the *moral* and the *physical*. As predisposing causes, the former, the moral, are all powerful ; they are also chiefly concerned in the direct production of such delusions as occur in an epidemic form. In these cases the hallucinations are transmitted by the influence of educational and social ideas, by the force of example, and by a true moral contagion. Profound preoccupation of the thoughts, and prolonged concentration of the mind on one subject,<sup>9</sup> are eminently favorable to the production of hallucinations ; and those are the most subject to them who by an ill-directed education are unceasingly excited, whose organization has become very impressionable, and in whom the imagination has been abandoned to its own impetuosity. The marvellous and horrible tales that are told to children are also a fruitful source of this subsequent impressibility. Burns complains, in strong language, of the permanently evil effects which these tales, told him in infancy, produced upon his after life. Solitary confinement in prisons has a very powerful effect upon the imagination. A striking illustration of this fact is found in the history of the imprisonment of Silvio Pellico, written by himself. Describing the mode in which he passed his nights, he says : —

“ During these horrible nights my imagination was so excited that, although awake, I seemed to hear groans and stifled laughter. In my infancy I had never believed in ghosts or witches, and now these noises terrified me. . . . Many times I took the light with a trembling hand, and looked if some one was not concealed under my bed. Seated at the table, it seemed to me that some one pulled me by the coat, sometimes that

an unseen hand pushed my book from the table, sometimes that one was about to blow out the candle. Then I rose suddenly, and asked myself whether I was mad or not. Every morning these phantoms vanished, but at sunset I again began to tremble, and every night brought back the extravagant visions of the preceding one."

I have already noticed the influence of the prevalent belief of any age in producing or determining the nature of hallucinations. It will readily be conceived how inordinately powerful is the effect of unrestrained religious enthusiasm, especially when aided by ignorance, superstition, and the unnatural restraints of a secluded or conventional life. But I have designedly refrained from discussing the hallucinations so produced, except in the most incidental manner.

Strong expectancy or conviction is a fertile source also of sensory delusion. I have before referred to persons who persisted that they were sorcerers and attended the witches' "*Sabbath*." In order to attempt to undeceive some of these unfortunate creatures, Gassendi imitated the popular notion of the proceedings of the witches, and rubbed some of them with an ointment, which was to send them to the *Sabbath*. They fell into a deep and long sleep, after which they awoke perfectly convinced that the magical proceeding had taken effect, and gave a detailed account of what they had seen, heard, and felt at the assembly at which they believed themselves to have assisted. Imitation, again, is a powerful agent in the production and propagation of delusions. "We may be asked" (says M. Boismont) "how large assemblies of people can be subject to the same illusion for so long. Independently of the reasons we have given, amongst which ignorance, fear, superstition, and disease play an important part, we must not forget the contagious influence of example; one outcry is sufficient to affright a

large multitude. An individual who believes that he sees supernatural sights is not slow to communicate his conviction to others who are not more enlightened than himself. The anecdote has been often quoted of the man who exclaimed that the statue upon which he and many others were looking nodded its head. All those who were present immediately asserted that they had seen it move."

Hallucinations will almost always be found to reflect the beliefs, the passions, the prejudices, and the manners of the age in which they occur. They vary, therefore, according to the amount of civilization and culture in the people. To enter into this question would almost involve a treatise on the philosophy of civilization. Predominant passions, such as fear and remorse especially, exert a powerful influence over the production of hallucinations. Semiramis saw everywhere the pale spectre of Ninus; and Brutus was haunted by the apparition of his former friend Cæsar.<sup>10</sup> Manoury, who was appointed in 1634 to examine Urbain Grandier, accused of sorcery, acquitted himself of his task with great barbarity. He repented of his cruelty, for "one evening, about ten o'clock, returning home in company with another man and his brother, he started suddenly, and cried out, 'Ah! there is Grandier, — what dost thou want?' and fell into such a state of tremor and frenzy that his friends could not recover him. They conducted him to his house, ever calling upon Grandier, whom he saw continually before him. In the course of a few days he died in the same state, always seeing Grandier, and trying to repel him." \* Sully relates that the solitary hours of Charles IX. were rendered wretched by the constant repetition of the cries and shrieks that as-

\* Sauze, "Essai Medico-Historique sur les Possédés de Loudon," p. 45.

sailed him during the massacre of St. Bartholomew. Such instances might be multiplied indefinitely, but these are sufficient for illustration. The great dramatist "of all time" has stamped remorse as a begetter of hallucinations forever, by his wondrous and terrible delineation of Macbeth.

Revery is another frequent cause, the mention of which should not be omitted. Dr. Brewster remarks, as a physical fact, that "when the eye is not exposed to the impressions of external objects, or when it is insensible to these objects in consequence of being engrossed with its own operations, any object of mental contemplation, which has either been called up in the memory or created by the imagination, *will be seen as distinctly as if it had been formed from the vision of a real object.*"

In Mr. Lecky's recent "History of European Morals" there is an eloquent passage illustrative of this subject. Referring to the early Anchorites, he says : "With such men, living such a life, visions and miracles were necessarily habitual. All the elements of hallucination were there. Ignorant and superstitious, believing as a matter of religious conviction that countless demons filled the air, attributing every fluctuation of his own temperament and every exceptional phenomenon in surrounding nature to spiritual agency ; delirious too, from solitude and long-continued austerities, the hermit soon mistook for palpable realities the phantoms of his brain. In the ghastly gloom of the sepulchre, where, amid mouldering corpses, he took up his abode ; in the long hours of the night of penance, when the desert wind sobbed around his lonely cell, and the cries of wild beasts were borne upon his ear, — visible forms of lust or terror appeared to haunt him, and strange dramas were enacted by those who were contending for his soul. An imagination strained to the utmost limit, acting upon a frame at-

tenuated and diseased by macerations, produced bewildering psychological phenomena, paroxysms of conflicting passions, sudden alternations of joy and anguish, which he regarded as manifestly supernatural. Sometimes, in the very ecstasy of his devotion, the memory of old scenes would crowd upon his mind. The shady groves and soft voluptuous gardens of his native city would arise, and, kneeling alone upon the burning sand, he seemed to see around him the fair groups of dancing-girls, on whose warm undulating limbs and wanton smiles his youthful eyes had too fondly dwelt. Sometimes his temptation sprang from remembered sounds. The sweet licentious songs of other days came floating on his ears, and his heart was thrilled with the passions of the past. And then the scene would change," &c.\*

M. Boismont sums up the influence of the moral causes as follows :—

"The mode of development of epidemic illusions and hallucinations refers them especially to moral causation. Education, beliefs, the dominant ideas of the epoch, the varieties of civilization, all require special consideration in any search after these causes. Amongst the moral causes which exercise a powerful influence over hallucinations, we must enumerate the belief in the power and operation of spirits and demons, witchcraft, magic, lycanthropy, vampyrism, ecstasy, &c. All passions, fixed ideas, great preoccupations of thought, may be the source of hallucinations, and more especially the passions of excessive fear and remorse."

I must now as briefly as possible refer to the physical causes of hallucinations. M. Boismont enumerates five divisions of these ; under the first of which he places heritage, sex, age, temperament, profession, physiological

\* Vol. II. p. 124.

causes, season, climate, and locality, most of which require no special notice. One of the most powerful predisposing causes is solitude in the evening.

“ Ere the evening lamps are lighted,  
And like phantoms grim and tall,  
Shadows from the fitful firelight  
Dance upon the parlor wall;

“ Then the forms of the departed  
Enter at the open door;  
The belovéd, the true-hearted,  
Come to visit us once more.” \*

The state of the atmosphere is well known to have a powerful effect upon the mind, and might therefore be well supposed to influence the production of visions. To this cause is due the collective hallucination of the *mirage*. In the campaigns of Africa and Egypt, the soldiers often saw springs, rivers, trees, cities, and armies; fantastic creations, which at their approach changed to dry and burning sands. In the *Gazette de Mons* there is an account of a balloon ascent by Mr. Green, containing some extracts bearing upon this point. It is said that, at a certain height, the “air was suddenly illuminated with great brilliance, and our eyes were subjected to so singular an aberration of vision, that every object, however small, assumed gigantic proportions, and such capricious forms, that we could almost believe ourselves under the influence of a dream. . . . In the midst of other transformations, there appeared monstrous forms, as of goats, mastodons, and the rhinoceros, which gazed upon us with great eyes of astonishment. Mr. Green said he had before witnessed these phenomena, but hesitated to speak of them to any one, for fear of being taken for a visionary.” A very natural or probable cause for these hallucinations would be found in the disturbance of the cerebral circulation, owing to the dimin-

\* Longfellow's “ Voices of the Night.”

ished pressure of the atmosphere at these altitudes,—the converse of what occurs when descending in a diving-bell. In the latter case congestion is induced; in the former, comparative anaemia.

Of all direct sources of hallucination, alcoholic liquors and narcotic substances, such as opium, belladonna, hachisch, and the like, are the most powerful. The delusions of *delirium tremens* are well known, as are those of opium, to all English readers, through the revelations of De Quincey in his "Opium-eater.". There is so strong a class likeness in all these effects of narcotics, that I shall not enter into any details: they may be found in abundance in works of special science. The use of narcotics for the purpose of producing visions and inspirations seems to have been known in all ages of which we have any authentic records. It seems undoubted that the priestesses of the ancient oracles were excited to their "divine rage" by the use of drugs of this nature. Then followed the effects so graphically portrayed in the *Aeneid* (Book IV.) :—

" Her color changed; her face was not the same,  
And hollow groans from her deep spirit came.  
Her hair stood up, convulsive rage possessed  
Her trembling limbs, and heaved her laboring breast.  
Greater than human kind she seemed to look,  
And with an accent more than mortal spoke;  
Her staring eyes with sparkling fury roll,  
When all the god came rushing on her soul."

The following account of the mode of preparing the oracle is from the article "Delphi" in the "Encyclopædia Britannica":—

" The oracles were delivered by a priestess called the Pythoness, who received the prophetic influence in the following manner: A lofty tripod, decked with laurel, was placed over the aperture whence the sacred vapor issued. The priestess, after washing her body, and es-

pecially her hair, in the cold water of Castalia, mounted on the stool to receive the divine effluvia. She wore a crown of laurel on her head, and shook a sacred tree which grew near the aperture. Sometimes she chewed the leaves, and the frenzy which followed may probably be attributed to this usage, and the gentler or more violent symptoms to the quantity taken. In one instance the paroxysm was so terrible that the priests and suppliants ran away, and left her alone to expire, as was believed, of the god. Her part was an unpleasant one ; but if she declined to undertake it, she was dragged by force to the tripod."

The use of chloroform as an anæsthetic is almost constantly attended by hallucinations of a more or less vivid character. These are of such a nature as to render it absolutely necessary for the person administering it to be aware of the tendency. A large collection of instances, illustrating the nature and tendency of these delusions, which scarcely admit of insertion here, may be found in the "Journal of Psychological Medicine" for October, 1855. Narcotic drugs applied as frictions, and perhaps taken internally, played a prominent part in the ceremonies attendant upon getting to the "*Witch-Sabbath*."

Of course, by far the greater number of illusions and hallucinations of a serious character owe their origin to some of the various forms of mental alienation, and to catalepsy, hysteria, hypochondriasis, as well as to nightmare, sleep, and ecstasy. Many of the instances we have related prove to demonstration that they may exist as delusions more or less transitory in a perfectly sound mind ; but a persistent hallucination *not* rectified by the understanding is generally either due to, or terminates in, mental alienation. Into this subject, and into the investigation of the various diseases that might enter into the catalogue of causes, I cannot, for obvious reasons, enter here.

It will be observed that there are certain large classes of hallucinations which have either been avoided altogether, or only indirectly alluded to. Such are, amongst others, religious hallucinations, and all those which are so frequently brought forward as illustrative of some especial views, prophetic or otherwise. This has been done partly because of the extreme difficulty of verifying and analyzing the histories in which they are related, but more especially because they would lead us away into discussions far remote from our purpose, which has been to open out, although partially and imperfectly, one of the most curious phases of the physico-psychical history of our nature. That it is one of great importance will be readily conceded; perhaps *how* great in a legal aspect few have considered. Even whilst I write this, a terrible fratricide has been committed under the influence of visual and aural hallucinations. I subjoin the account from a daily paper, only omitting names and places.

"On Sunday afternoon, a melancholy occurrence took place at a farm-house in the parish of L—, Carmarthenshire. It appears that a Mrs. E— resided in the farm, together with her two sons, L— and S—E—. The brothers had always been quite friendly with one another; but on Sunday afternoon, L—, it appears, without the least provocation, deliberately shot his brother in the head with a double-barrelled gun, and instant death followed. Information was immediately conveyed to the police, and on the same evening L— was apprehended at P—, a few miles distant from the farm. He admitted that he had shot his brother, and said, 'I was commanded to do it by the Lord.' When before the magistrate, the prisoner made the following extraordinary statement: 'My father is a solicitor at D—, and is now living there. He took a farm in L—, called D—, in November last, where my

mother and brother resided. My father is now at D——. On the 27th of July last I was getting up at seven in the morning, to join some young men, when two angels appeared to me, and asked me if I knew what day of the week it was. It was Sunday. I then remained in my bedchamber for six weeks. Yesterday I received a communication from the Lord to shoot my brother, who had broken every commandment. I found the gun loaded in the kitchen, prepared for me. It was a double-barrelled gun. I found my brother in the yard with a sickle in his hand. I raised the gun. He said he was my only brother. I obeyed the Lord's command. I did not tell him that I was going to shoot him. I was about six feet from him. He put his hand to his head. I fired, and he fell dead. I did not touch him with the sickle. Nobody but the Lord was present when I shot him. I have been a master's assistant in the navy. I am twenty-one years of age, and retired from the navy about three years ago. I had been wounded in 1859 by the son of a clergyman, named Nicholas Denys, in South America. I was on board the ship *Wasp*, sloop of war. He fired a revolver at me, thinking it was not loaded. The ball entered my right groin. I had an attack of epilepsy from the effects of the wound, and was invalided in consequence, and left the navy.' The prisoner signed the statement without the least emotion, and in a firm manner. He was then formally committed to take his trial for murder at the next Carmarthenshire Assizes. The general opinion prevails that the prisoner is really insane."

Those who are conversant with medico-legal matters are aware that murder, suicide, violence, robbery, and many other crimes, are very frequently the result of illusions and hallucinations, phenomena which had been noticed, but treated as matters of little or no moment; when an intelligent recognition of the significance of

these aberrations might have in many instances prevented their culmination in crime. The relations of the law, as at present constituted, to all mental affections, is singularly vague and defective. That the subject abounds with difficulties of an almost insurmountable nature, especially in a criminal aspect, I am well aware; nor can we wonder at the general reluctance manifested to enter upon a reformation under such circumstances; but it cannot be doubted that the time must come when an attempt must be made in that direction.

We now take our leave of this almost inexhaustible subject; but by way of further illustration append two short papers, treating of real or supposed hallucinations, the subjects of which were SOCRATES and PASCAL.

## THE DEMON OF SOCRATES.

*Being an Appendix to "Illusions and Hallucinations."*

THE glory was departing from Athens. Above a thousand years had elapsed since its foundation : it had passed through all gradations, from a condition of barbarism, when its Heroes were little better than skin-clad freebooters, to one of refinement, which made it the centre of the civilized world. It had most powerfully influenced the destinies of Greece, by successfully opposing almost single-handed the entire power of Xerxes ; and its military renown had culminated in the immortal victories of Marathon, Salamis, and Platsea. The pride, the arrogance, which manifested themselves after these great events, stirred up against it the other States of Greece, and determined them to its destruction. But far worse than external enemies were those that arose within. Enervating luxury and brutal intemperance gradually invaded all ranks of society, and a general demoralization was the result. Then ensued that certain sign of decaying power, or of a State shaken to its very foundations, that prelude to its fall, — rapid changes of forms of government, from rabid democracy to oligarchy and despotism.

Yet, menaced as she was both from within and without, Athens was still, and long continued to be, the favored seat of learning and the arts. In the period to which we allude (about the fifth century B. C.), she numbered amongst her celebrated sons such intellectual giants as Pericles, Phidias, Æschylus, Sophocles, Eurip-

idea, Aristophanes, Socrates, Xenophon, and Plato. It is curious and interesting to analyze the elements of civilization in times which could produce great intellects like these. Personally, a superficial refinement of manner barely professed to conceal a gross licentious immorality, assuming forms which forbid even a faint allusion in these times, — publicly the most shameless undisguised venality characterized their courts (misnamed) of justice. In their external relations, the wars, undertaken on the slightest pretexts, were wars of extermination, — the cities were destroyed, and the inhabitants killed or enslaved. Occasionally, even yet, the favor of the gods was propitiated by human sacrifices. On the morning of the battle of Platæa, Aristides sent to Themistocles three nephews of Xerxes, whom he had taken prisoners ; and by the advice of an augur, they were sacrificed to Bacchus, to purchase his favor. Thus, although the Greeks were no longer anthropophagi, their gods were. The thousands of deities that were admitted, and in some sort worshipped, were but the coarsest embodiments of human passions, — drunken, gluttonous, indecent creations, half despised and half feared by their votaries, — somewhat more powerful than men, but susceptible of being duped by them ; and equally with them subject to an unalterable, irrevocable fatality. But as a contrast or background to the portrait of Socrates, and a sketch of his teaching, nothing can be more effective than a statement of the condition of what was called philosophy before his day. Now that exact science has made at least some progress in the world ; now that facts are in some measure recognized as necessary elements in theorizing ; now that observation, at least so far as science is concerned, is allowed to be a necessary preliminary to dogmatism, — it is scarcely possible for the mind to realize or credit the futile nature of the

questions which occupied the acutest minds ; or the arbitrary, wordy, windy, unreasoning manner in which they were settled by one school, or unsettled by another. Now that the majority of men recognize a material and an immaterial nature, it is difficult to picture the chaotic ideas held on the subject of the Universe, its origin, its nature, its laws.

" All the philosophers," says Mr. Grote, " of the fifth century B. C., prior to Socrates, inheriting from their earliest poetical predecessors the vast and unmeasured problems which had once been solved by the supposition of divine or superhuman agents, contemplated the world, physical or moral, all in a mass ; and applied their minds to find some hypothesis which would give them an explanation of this totality, or at least appease curiosity by something which *looked like* an explanation. What were the elements out of which sensible things were made ? What was the initial cause or principle of those changes which appeared to our senses ? What was change ? was it generation of something integrally new, and destruction of something pre-existent ? or was it a decomposition and recombination of elements still continuing ? "

Others were occupied in demonstrating the impossibility of change or motion. Parmenides denied that change of either color or form could take place. Zeno \* showed by logic that motion was impossible, a proposition supported strongly by Melissus and many others ; they upheld likewise the unity of matter, that the real ultra-phenomenal substance was One, unchangeable and indivisible ; whilst their opponents maintained that it was not One but Many, divisible, movable, and changeable. These, and other equally urgent matters, occupied the minds of all thinking men. Observation and induction seem

\* Not Zeno the Epicurean, but Zeno of Elea.

to have been unknown or practically ignored ; with the exception of some few discoveries in astronomy and mathematics, science was in complete infancy ; physical science was represented only by such theorists as Thales, Leucippus, Democritus, and Empedocles, reasoning vaguely upon air, water, fire, atoms, and their combinations, by means of Friendship or Enmity, as causes of motion or change. A complete bar also to progress in observation was the opinion so generally held, that the senses were delusive, and not to be trusted in any matter. Georgias professes to demonstrate "that nothing exists ; that if anything exist, it is unknowable ; and granting it even to exist, and to be knowable by any one man, he could never communicate it to others" (Grote, p. 503). It may be questioned whether some of the ontological doctrines of our own times are much more explanatory. Cicero, in his " Academic Questions," gives a brief summary of the cosmogonic systems of this age, fully illustrating the entire ignorance of natural science which prevailed, and the tendency to rest in forms of words.

" *Is (Thales) enim infinitatem natureæ dixit esse, ex qua omnia gignerentur. Post ejus auditor Anaximenes, infinitum æera, sed ea, quæ ex eo orientur, definita ; gigni autem terram, aquam, ignem, tum ex his omnia. Anaxagoras materiam infinitam, sed eas particulas similes inter se, minutas ; eas primum confusas, postea in ordinem adductas mente divina. Xenophanes, unum esse omnia, neque id esse mutabile. Parmenides, ignem, qui moveat terram, quæ ab eo formatur, Leucippus, plenum et inane. — Pythagorei ex numeris et mathematicorum initiis proficisci volunt omnia.*"

Content thus to remain bound up in forms of words without meaning, debarred from further progress by the legitimate way of observation by distrust of the senses,

because these revealed to them phenomena which would not be thus formulated, philosophers degenerated into mere sceptics, doubting nature, doubting themselves, doubting their gods. "Respecting the gods," says Protagoras, "I neither know whether they exist, nor what are their attributes; the uncertainty of the subject, the shortness of human life, and many other causes, debar me from this knowledge." Philosophy, it was evident, must receive some new impulse, be diverted into new channels, or it must perish. This impulse was not long wanting. In the workshop of Sophroniscus, a sculptor, was a youth who was destined to introduce a new philosophy, new morals, new manners, and almost a new religion; and all this without any formal teaching, without professing any code of opinions, without forming any school. His one weapon with which he warred against the vices, the scepticisms, the obstinacy, the self-conceit of the world and the sophists, was the great negative arm of Grecian analysis, the cross-examining Elenchus. It may also be said to have been created or invented by Socrates (although Zeno\* seemed to be in some measure acquainted with its value); it may truly be said to have perished with him.

"Where are we to look for a parallel to Socrates, either in or out of the Grecian world? The cross-examining Elenchus, which he not only first struck out, but wielded with such matchless effect and to such noble purposes, has been mute ever since his last conversation in the prison; for even his great successor Plato was a writer and lecturer, not a colloquial dialectician. No man has ever been found strong enough to bend his bow, much less sure enough to use it as he did. His life remains as the only evidence — but a very satisfactory evidence — how much can be done by this sort of intel-

\* Of Elea.

ligent interrogation ; how powerful is the interest which it can be made to inspire ; how energetic the stimulus which it can apply in awakening dormant reason, and generating new mental power.”\*

Simple, unostentatious, and temperate, amid the luxuries and temptations of the most luxurious city in the world, — pure among the most impure, — virtuous amongst the most venal, — clear-sighted to see through the sophisms and verbiage which overlaid and swamped all thought, — he devoted all the energies of his hardy nature, all the tendencies of a long life, to the practice and inculcation of virtue. St. Augustine says of him, that he was the first who, leaving celestial matters as too obscure or abstruse to be penetrated by man, reduced philosophy to the reformation of manners ; and Cicero says, *Socrates autem primus philosophiam devocavit ē cœlo, et in urbibus collocavit, et in domos etiam introduxit, et coegit de virtute, et moribus, rebusque bonis, et malis querere.* Forsaking as either unworthy or impossible of solution the questions which hitherto have been supposed to constitute philosophy ; as to the One or the Many, — motion, divisibility, or stability of matter, change or permanency, &c., — he continually turned his investigations and the thoughts of his interlocutors to *human* affairs. What is good ? What is beautiful ? What is just or unjust ? What are temperance, courage, cowardice ? What is a city, and what a citizen ? What is piety ? Such were the questions with which he was ever occupied, leading his fellow-citizens to the comprehension of the great truths involved in them ; whilst in his own person he afforded a bright and consistent example of all the virtues which he taught. Stern rebuker of vice, — uncompromising enemy to injustice, even in high places, — living reproach to impurity, — terrible enemy to the

\* Grote's “History of Greece,” Vol. VIII., p. 664.

darkening of counsel by words without knowledge, — he was found too far, morally and intellectually, in advance of his countrymen to be tolerated by them, and they put him to death. But it remained for the wisdom of the nineteenth century to make the great and somewhat startling discovery that Socrates was A MADMAN ! That we may not be liable to the imputation of misrepresentation, we quote literally from M. Lélut's recent work <sup>11</sup> the following passage : —

“ Reste une troisième et dernière opinion . . . . et cette opinion, qui consiste à dire que Socrate était un théosophe, un visionnaire, et pour dire le mot, UN FOU — cette opinion est la seule vraie.”

This opinion is founded upon the contested point of the demon or familiar spirit of Socrates ; M. Lélut considering it as an hallucination of hearing, and perhaps of sight also ; and thus arriving at the conclusion that Socrates was of unsound mind. A brief sketch of his life and character is necessary as a preliminary to the examination of this point.

Socrates was born about the year 469 B. C. His father was Sophroniscus, the sculptor, and his mother Phanarete, a midwife. Of his childhood little or nothing is known, except that his father was advised by an oracle to leave the child to his own natural instincts, as he had within himself a guide worth a thousand teachers. Notwithstanding this, he was brought up to his father's profession, for which he had little vocation ; and, according to Diogenes Laertius, might often have been observed, chisel in hand, lost in thought, arrested in his uncongenial but necessary toil by some vein of philosophic inquiry. He made some progress in the art of sculpture ; and as late as the time of Pausanias a group of his workmanship was to be seen at the entry of the citadel of Athens. From the necessity for manual labor he was at last re-

leased by the generosity of Crito, at what period of life does not appear, but most probably when about nineteen years of age. At first he seems to have pursued the ordinary curriculum of study, including the physical sciences of that time, with geometry, music, and the art of oratory : he soon, however, concluded that these studies were either useless, or shrouded in impenetrable darkness ; and thenceforth he devoted himself entirely to the study of morals, and of the duties of men and citizens. "These efforts," says M. Lélut, "of renovating moral philosophy were not made from a professorial chair, nor in a place set apart for tuition, nor at set times, in the intervals of which he thought of other things. They were made in all places, at all times, — in Athens, as with the army, — in the street, as at the dining-table, — in the workshops of artisans, as in the boudoir of Callista or of Theodote."

In the street, the forum, the baths, the gymnasium, — wherever the people, particularly the youth, were congregated, there was Socrates with his never-ending questions. Of the origin, reasons, and method of this system of interrogation, he himself gives an account in his *Apology* as related by Plato. It appears that a friend of his, named Chærepho, being at Delphi, ventured to inquire of the oracle who was the wisest man, and received for answer that none was wiser than Socrates.

"I reasoned thus with myself : What does the god mean ? what is the enigma ? For I am not conscious that I am wise, either much or little. . . . Afterwards, with considerable difficulty, I had recourse to the following method of searching out his meaning."

He then describes how he went to one of the greatest politicians of the day and questioned him, and how he found that he was only wise in the opinions of others and in his own, but not really so.

"I thereupon endeavored to show him that he fancied himself to be wise, but was not really so. Hence I became odious, both to him and many others who were present. When I left him, I reasoned thus with myself: I am wiser than this man, for neither of us appears to know anything great or good; but he fancies he knows something, although he knows nothing; whereas I, as I do not know anything, so I do not fancy I do. In this trifling particular, then, I appear to be wiser than he."

His researches amongst all classes of the learned led him to the same conclusion,—he everywhere found that he was making himself odious by exposing ignorance and pretence; but feeling that to elucidate the meaning of the oracle was of paramount importance, he continued the same course of interrogation.

"At last, therefore, I went to the artisans. For I was conscious to myself that I knew scarcely anything, but I was sure that I should find them possessed of much beautiful knowledge. And in this I was not deceived; for they knew things which I did not, and in this respect they were wiser than I. But, O Athenians, even the best workmen appeared to me to have fallen into the same error as the poets; for each, because he excelled in the practice of his art, thought that he was very wise in other most important matters; and this mistake of theirs obscured the wisdom that they really possessed. I therefore asked myself, in behalf of the oracle, whether I should prefer to continue as I am, possessing none either of their wisdom or their ignorance, or to have both, as they have. I answered, therefore, to myself and to the oracle, that it was better for me to continue as I am."

His general conclusion is, that all being alike ignorant of any real wisdom, human knowledge being of little worth, he only can be wiser than his fellows who is aware of this ignorance.

"Still, therefore, I go about and search and inquire into these things in obedience to the god, both among citizens and strangers, if I think any one of them is wise; and when he appears to me not to be so, I take the part of the god, and show him that he is not wise."

It is related that when Sir H. Davy was making his great researches into the constitution of the earths and alkalies, some of the chemical professors felt greatly aggrieved at having their previous notions disturbed. A noted professor at a Scotch University refused all recognition of these researches, as long as he decently could do so. When ultimately compelled to make some allusion to them, he did it very briefly, accompanying it with the opinion that Mr. Davy was "a very tiresome person." Such in an eminent degree must have been the judgment of many of the Athenians with reference to Socrates. All those who, under the pressure of his "Elenchus," were reduced to silence, palpable contradictions, or tacit confessions of ignorance, would be inclined to view him with little favor. Those who winced under his crushing irony,—those whose vices he lashed so unsparingly,—those whose secret souls he laid bare for their own inspection and appreciation,—all would hate him much more than they would despise themselves. A notorious instance occurred in the person of Critias, who at one time was a constant follower of Socrates. Having spoken earnestly to Critias on the subject of one of the vices then fashionable, and he having paid no attention to his remonstrances, λεγεται τον Σωκρατην, αλλων τε πολλων παρουσιων και τον Ευθυδημον, ειπειν, οτι νικον (τι) αυτω δοκοιη ο Κριτιας, επιθυμων Ευθυδημον προσκυνησθαι, ωσπερ τα νιδια τοις λιθοις. An eminently disagreeable person must Critias have thought Socrates; and he did not forget it.

The remarks made by our great English satirist upon Swift would have been very applicable to Critias: "If

undeterred by his great reputation you had met him like a man, he would have quailed before you, and not had the pluck to reply ; and gone home, and years after written a foul epigram about you, — watched for you in a sewer, and come to assail you with a coward's blow and a dirty bludgeon." For years afterwards, when he had long left the society of Socrates, and was one of the Thirty Tyrants, he remembered his sarcasm, and not knowing how to find matter of accusation against Socrates individually, so pure and blameless was his life, he inserted in the laws that "none should teach the art of disputation," and took every opportunity of using his power to annoy him. Polus, a pert, loquacious young man, who had put himself forward to answer Socrates in the place of Gorgias the rhetorician, went away smarting under his irony, and doubtless thinking him very objectionable.

"*Socr.* Most excellent Polus ! we get ourselves friends and sons for this express purpose, that when we, through being advanced in years, fall into error, you that are younger, being with us, may correct our life both in deeds and words. If, then, Gorgias and I have fallen into any error in our arguments, do you who are present correct us ; you ought to do so. And I wish that if any of the things that have been granted appear to you to have been improperly granted, you would retract whatever you please ; only I beg you beware of one thing.

"*Pol.* What is that ?

"*Socr.* That you would restrain that prolixity of speech which at first you attempted to employ.

"*Pol.* What ? shall I not be allowed to speak as much as I please ?

"*Socr.* You would indeed be very badly treated, my excellent friend, if, having come to Athens, where of all Greece there is the greatest liberty of speech, you alone

should here be deprived of this liberty. But set this against it ; if you speak in a prolix manner, and will not answer a question put to you, shall I not be badly treated if I am not allowed to go away and not listen to you ?”

But leaving for the present the method and matter of the teaching of Socrates, it is time to inquire into the grounds upon which M. Lélut considers it right to class him amongst madmen.

His persuasion of a special religious mission was one of the leading peculiarities in the character of Socrates. This is more than once alluded to in his defence before his judges. “This duty,” he says, alluding to his mission to cross-examine his fellow-citizens upon points of virtue and piety, “has been enjoined me by the Deity, by oracles, by dreams, and by every mode by which any other divine decree has ever enjoined anything to man to do.” And again : —

“Perhaps, however, it may appear absurd that I, going about, thus advise you in private, and make myself busy, but never venture to present myself in public before your assemblies, and give advice to the city. The cause of this is that which you have often and in many places heard me mention : because I am moved by *a certain divine and spiritual influence*, which also Melitus, through mocking, has set out in the indictment. This began with me from childhood, being a *kind of voice* which, when present, always diverts me from what I am about to do, but *never urges me on*. This it is which opposed my meddling in politics ; and it appears to me to have opposed me very properly.”

In this and passages of similar import are to be found the entire elements of this allegation. Socrates was constantly in the habit of expressing himself as moved and influenced by the god,  $\delta\ \theta\epsilon\sigma$  ; by a divine or spir-

itual influence — το δαιμονιον — or το δαιμονιον σημειον — translated by some substantively as the DEMON, and the sign of the Demon ; by a voice — φωνη — *checking* him, but never *urging* him on.

There are three modes of interpretation of these forms of expression, — three hypotheses to account for the facts. The first is, that Socrates used these words to express, figuratively and forcibly, the motions of conscience. The second is, that it was a system of deceit practised by him to increase his power over the minds of his hearers, and propagated by his followers to add to the dignity of their master, as having been under immediate Divine guidance.

The third opinion is the one adopted or suggested by M. Lélut, that Socrates was subject to hallucinations of hearing, — perhaps also of sight ; that he was therefore a visionary, — a madman !

We will briefly follow the arguments and considerations relative to the psychological history of Socrates, by which M. Lélut endeavors to support this view. He introduces the subject thus : —

“ Since Plato and Xenophon, all the writers who have examined with any precision the thoughts and acts of Socrates have united, under the generic title of DEMON, or Familiar Spirit, all that part of those thoughts and acts relative to the singularities of his life which is beyond the common course. I mean his inspirations, his presentiments, his prophecies, and especially that divine Voice which he heard, or said that he heard ; which impelled him to no action, but deterred him from many which might have been unjust or dangerous ; a voice which enabled him at many times to give to his friends and disciples counsels, which they always found good to follow, and dangerous to neglect.

“ In recognizing and exalting the purity and sublimity

of his life, the admirable consecutiveness of his thoughts and actions, all writers have remarked something extraordinary and eccentric in this life exclusively consecrated to the triumph of one or two ideas, and to the accomplishment of the same design. . . . Not only was he a *singular* youth, but he had been a singular child, — of a meditative spirit doubtless ; of great capacity ; but assuredly of an equally great peculiarity : of this no further proof is needed than the counsel of the Oracle to leave him to his own natural instincts, and own confession that from a child he had felt the influence of the *genius* in question.

“ Socrates, then, had from his earliest years a *singularity* (I lay stress upon the word) which his mature age was not to belie. Was he not in reality a singular man, this Socrates, clothed in the same mantle in all weathers and seasons, — walking barefoot upon the ice as upon the parched and heated soil of Greece, — dancing and leaping, often alone, by fits and starts, — leading, in the eyes of the vulgar, the most eccentric life, — having no other occupation than to pervade the public places and the workshops of the artisans, — pursuing every one with his questions and his irony, — receiving nothing from friends or disciples, yet asking them for a coat when necessary, — acquiring, in fine, by his conduct and manners, such a reputation for eccentricity, that he was afterwards surnamed by Zeno the Epicurean, as Cicero relates, *Atticus scurra*, the buffoon of Athens, — what we should now call an original ?

“ Notwithstanding these things, the Oracle of Delphi, when consulted by Chærepho as to who was the wisest man of Greece, replied : Sophocles is wise, Euripides is wiser, but Socrates is wisest of men. Thereupon Socrates, who wished to understand the meaning of this, commenced amongst all professions in Athens that sin-

gular course of interrogations, which by demonstrating the ignorance of those who were accounted wise, drew upon him the hatred of so many.

"Psychologically speaking, the matter might have rested there, and he have been only accounted a singular and extraordinary man, if he had not from his infancy been disposed to take the inspirations of his conscience for the voice of a supernatural agent. This thought, too lively, too ardent, too much disposed to *transfer itself to the exterior*, to clothe itself with personality, to become an image, or at least an audible voice, took in effect this last form ; and then commenced all at once the *hallucinations* of Socrates, that is to say, the most undeniable form of alienation (*l'espèce de folie la plus irréfragable*)."

M. Lélut considers the actual insanity of Socrates to have commenced at the siege of Potidæa, where he served with distinction as an oplitæ, and where he had a fit of abstraction, which appeared like an ecstasy or trance. We find an account of this given by Alcibiades in the "Banquet," which it may be well to give entire :—

"But what this patient man did do and dare during the campaign there, it is worth while to hear. For while he was thinking of some question for himself, he stood from the dawn investigating it ; and as he did not succeed, he did not desist, but stood still investigating it. It was midday, and some persons perceived him, and, wondering, said that Socrates had been standing from the morning thinking upon something. At length some Ionian soldiers, when it was evening, having supped,—for it was then summer,—brought out their ground-litters, and partly slept in the cold, and partly kept watch, whether he would stand there all night. And he did stand until the dawn appeared and the sun rose ; after which he departed, having first offered a prayer to the sun."

In commenting upon this relation, M. Lélut observes that we must either deny the facts, or "recognize in them the commencement of a condition which no one would voluntarily experience, even to possess all the virtue and all the glory of the son of Sophroniscus." Not to interfere with the general course of the argument, I would merely suggest that this does not appear to me an exhaustive view of the subject, but that, recognizing the facts, we need not attach so serious an import to them. It is not impossible that he who had turned his back upon an old, worn-out, effete system of philosophy, and who out of the depths of his own thought had eliminated the great truths of the immortality of the soul, and the certainty of a future state of rewards and punishments, — who from a chaotic Polytheism had arrived at the belief in ONE GOD, the CREATOR and upholder of all things, — it is not impossible that such a man may have been so wrapt and lost in the opening immensity and profundity of these considerations as to become insensible to surrounding objects for even so long a time as is here mentioned. Archimedes and Newton were not suspected of madness because of their frequent and prolonged reveries ; and their problems yield in vastness to those that engaged this colossal mind.

M. Lélut relates one or two other instances of his reveries, or, as he would style them, ecstasies ; and then proceeds to quote from the " Dialogues of Plato " most of the passages where Socrates speaks of himself as influenced by the god ( $\delta\theta\epsilon\sigma$ ), the demon ( $\tau\omega\delta\alpha\mu\omega\nu\omega$ ), or the voice ( $\eta\phi\omega\nu\eta$ ). Some of them are certainly remarkable. In the " Philebus," Socrates uses this expression : —

" At the moment of passing the water, I felt the divine signal ( $\tau\omega\delta\alpha\mu\omega\nu\omega\sigma\eta\mu\epsilon\omega\eta$ ), which is familiar to me, and the presence of which always arrests me at the mo-

ment of action. I seemed to hear a voice which forbid me to cross." This would, *so far*, appear to argue a belief in some separate personality; but an examination of the following remark modifies this impression much. "Such as you see me, I am a diviner (*εἰμι δη μάντις μεν*), — not a very able one, truly; I resemble those whose writing is only legible to themselves, — I know enough for my own purposes. *The human soul has a prophetic power.*" Here the same powers are spoken of as personal, — not as communicated from without.

Some of the most remarkable passages, however, are those in which Socrates speaks of his influence over his pupils, in which some mysticism may readily be discovered by those engaged in the search after it. In the "Theages," Socrates relates a conversation of his own with Aristides, the son of Lysimachus, by way of illustrating this influence. He represents Aristides as saying: —

"I am going to relate a thing which might appear incredible, but which is nevertheless true. I have never learnt anything from you, as you very well know. And yet, when with you, even in the same house, though not in the same room, I have always profited in wisdom; when in the same room, I have advanced more rapidly still; but most of all when, being in the same room, I had my eyes fixed upon yours; or most especially if I sat near you and touched you."

Socrates then continues: —

"Such, dear Theages, is the commerce that one may have with me. *If it please the god* (*τῷ θεῷ*), you will, by being near me, profit much, and in little time; but *if not*, your efforts will be in vain. Consider then whether it will not be more advantageous to you to attach yourself to some master who will certainly be useful to you, rather than to follow one who cannot answer for anything."

M. Lélut remarks upon this: —

"I cannot refrain from pointing out how strange in their nature and development, how truly maniacal (*véritablement maniaque*) in principle, are the beliefs and pretensions announced in the last passage. Here is Socrates, who not only imagines that he receives divine influences and inspirations, and hears a divine voice ; but who, by reason of this privilege, believes that he possesses a similar influence, even at a distance, upon his friends, his disciples, and even strangers ; an influence independent of word or look, exerting itself even through walls. In truth, it is impossible to hear or see anything more extravagant or more characteristic of madness ; et les hallucinés, qui, sous nos yeux, prétendent envoyer ou recevoir à distance des influences physiques, magnétiques, franc-maçonniques, ne s'expriment pas autrement que Socrate, et ne sont, sous ce rapport, *pas plus fous qu'il ne l'était.*"<sup>12</sup>

M. Lélut then passes on to comment upon the expressions used by Socrates in his defence, with reference to the divine influence under which he acted ; and he is of opinion that these develop, in the most formal manner, as obvious and inveterate hallucinations of hearing as were ever observed by a physician. The passages are too long to cite textually. In the "Apology," Socrates repeatedly uses all the forms already quoted, — professing in all matters to *act* under the immediate influence, guidance, and direction of the divinity (*τὸν θεόν*), which, be it remarked, is attended by no voice ; but to be restrained from action by the *voice*, or Demon, — the *φωνή*, or *δαιμονίου σημεῖον*. He tells the Athenians that he has pursued the course of life which they so reprobate, influenced by the god, through the medium of dreams, oracles, &c. He tells them that he has *refrained* from preparing a defence, because the Voice prevented him. Upon all this M. Lélut puts the same literal interpretation as before noticed.

In the determination to represent Socrates as the victim of hallucinations, he extends them from the ear to the eye, and insists that Socrates *saw* his Demon as well as heard it, — though he himself emphatically disclaims such a vision, and moreover disputes its possibility. He says that there are gods, who preside over the well-being of men, but that only their works are visible in results ; and that neither they themselves nor their immediate agents (as the thunderbolt) are visible or palpable at any time. ("Memorabilia," lib. iv.) Yet on the strength of a vague conjecture of Apuleius, M. Lélut says he has no doubt that the eye was subject to a corresponding hallucination with the ear ; and an equally unsatisfactory testimony states that the sense of touch was similarly affected. In his general summary he says : —

"Socrates had ecstasies, almost accessions of catalepsy, as happened to him at the siege of Potidaea, and elsewhere. Soon these ecstasies assumed the character of more definite hallucinations, shorter, but more frequent,— hallucinations of the general tact or sensibility internal or external ; hallucinations especially of hearing, and most probably of vision. Nothing assuredly can be more extraordinary ; but, at the same time, nothing can be more irrefragable as a criterion of insanity than these hallucinations."

Socrates had undoubtedly some faith in dreams of a certain character, — he spoke in mysterious phraseology also of the prophetic powers of the spirit of man. From all these considerations combined, M. Lélut concludes that *Socrates was insane*.

It is undoubtedly true that there are many hitherto "unrecognized forms of insanity," developing themselves in peculiarities and changes of temper, habits, general disposition, morals, and the like. But it appears to be a retrograde step, and one likely to throw discredit upon

psychological inquiry, and to subvert all useful generalization, to look for marks of insanity in a close adhesion to the modes of belief of any particular age and country, a poetical or figurative mode of expression, and a habit of reverie ; — to see mental aberration in slight eccentricities of conduct, in defiance of the evidence of a long life characterized by the acutest and most comprehensive intelligence that perhaps ever adorned man ; a purity and blamelessness of life and manners which not even his bitterest enemies could impeach ; and a death such as might well have crowned, and added new lustre to, the life of the greatest of ancient philosophers.

When analyzed, the evidence upon which Socrates is here pronounced insane may be considered under these heads : (1) His belief in a special divine mission ; (2) his frequent references to a spiritual monitor or Voice, called by some his Demon or Genius ; (3) his reveries or ecstasies ; (4) his belief in dreams ; (5) his belief in, and claims of possessing, a prophetic power ; and (6) certain eccentricities of habit and manner.

1. Socrates was in the constant habit of expressing himself as acting under the direct influence and impulse of the god. He was so far in advance of the great majority, if not all, of his countrymen, as to recognize one Supreme Power, who was not a practical nonentity in the world, but a Creator and an upholder, and who exercised a paternal care over his creatures. As a *stimulus to action* he always recognized this power, piously acknowledging that all ability and all disposition to action came from this source. When Aristodemus inquired into the nature of this influence, he advised him to pay special and assiduous court to the gods, that they may exert a similar one over him : thus, in this instance, at least, disclaiming any peculiar theurgic manifestation.

2. The case is somewhat different with regard to the especial monitor or Voice, to which he so constantly alludes. Though acknowledging one Supreme Power, he did not entirely forsake the Polytheism of his country ; but believed in certain inferior orders of spirits, called Demons, who were the immediate agents in carrying out the Supreme will. Of these he believed that one (or more) was appointed to every man to be his guardian,—to perform near him certain providential functions. In the "Phædo," giving his friends a summary of his creed, amongst other things he says, that "each person's demon, who *was assigned to him while living*, when he dies, conducts him to some place where they that are assembled together must receive sentence, and then proceed to Hades with that guide, who has been ordered to conduct them from hence thither. But then having received their deserts, and having remained the appointed time, another guide brings them back hither again, after many and long revolutions of time." This belief seems not to have been contrary to that of the ancient world generally, "insomuch," says Mr. Grote, on this subject, "that the attempts to resolve phenomena into general laws were looked upon with a certain disapprobation, as indirectly setting it aside." This may be granted then, that he believed in the existence of demons with a special mission to act upon nature and man, one of which at least attended upon every man. But he frequently spoke of a something peculiar to himself, an influence, a voice, which diverted him from any act which he was about to commit, but never urged him on, or suggested anything. In this particular it differs essentially from the *motor* influence noticed under the former head. But this restraining power, which he said had always forbidden him to enter on public life, and prevented his preparing any formal defence at his trial, — this power, although

spoken of by many writers as his Demon or Genius,— he himself *never personified*, but spoke of it as a “kind of voice,” or a “certain divine and spiritual influence”; it was never more than *το* or *τι δαιμονιον*, with or without the word *σημειον* added,— or *φωνη*, the Voice. Critically, it is acknowledged that the former phrase, which M. Lélut always translates “the Demon,” is only properly to be understood adjectively, even when the substantive is not expressed; and therefore that it can but be translated “something spiritual.” M. Cousin, the learned translator of the works of Plato, holds this view as undeniable; and one of the highest critical authorities in Europe, Schleiermacher, says: “*Semper adjective ponit hanc vocem, neque in ullo Xenophontis aut Platonis aut aliorum Scriptorum aequalium loco substantive de deo accipi debere.*” Cicero also interprets it as “*divinum quoddam*.” It seems to have been a highly figurative method of speaking of conscience and reason, which he conceived to be stronger in him than in other men (and in so far peculiar to him); inasmuch as his recognition of the Divine Power, and the reverence to be paid thereto, was more intense and constant. For it will be found that almost invariably after speaking of being prevented by this “divine influence” from adopting any particular course, he gives some *human* and *rational* grounds for such a determination. Thus, in his “Apology,” having related how this Voice had always prevented him meddling in public affairs, he adds:—

“For be well assured, O Athenians, if I had long since attempted to intermeddle with politics, I should have perished long ago, and should not have at all benefited either you or myself. And be not angry with me for speaking the truth; for it is not possible that any man should be safe who sincerely opposes you, or any other multitude, and who prevents many unjust and illegal

actions from being committed in a city ; but it is necessary that he who in earnest contends for justice, if he will be safe for but a short time, should live privately, and take no part in public affairs."

And when he stated that the Voice had prevented his preparing beforehand any defence, he adds *the reason why* : —

" For what has befallen me appears to be a blessing ; and it is impossible that we think rightly who suppose that death is an evil. . . . To a good man nothing is evil, neither while living nor when dead ; nor are his concerns neglected by the gods. And what has befallen me is not the effect of chance ; but this is clear to me, that now to die, and be freed from my cares, is better for me."

It is unnecessary to multiply instances. There is scarcely an occasion when the Voice is not accounted for in a manner equally rational.

But it may be asked, What was the meaning of those strong expressions, which seemed to imply that there was an actual audible voice ? An examination of a passage in the "*Crito*" will show that these were purely poetical or figurative. His friend Crito had come early one morning to the prison, after his condemnation, with the intent to persuade him to escape. Socrates takes the opportunity to discuss with Crito the duties of a citizen ; and, in the course of the conversation, shows that he must obey the established laws at whatever cost to himself. He shows that the city has nurtured him and protected him, — that he has been most especially a voluntary citizen of Athens, never having left it, except in time of war ; and so recognized the right and power which her laws possessed over him. He then personifies these laws, and supposes them to be addressing him, pointing out all the benefits he has received from his

country, and all the evil that might result from his attempting to evade the decree, concluding thus : —

“ But now, Socrates, you depart (if you *do* depart) unjustly treated, not by *us*, but by men ; but should you escape, having thus disgracefully returned injury for injury, and evil for evil, — having violated your own compacts and conventions which you made with us, and having done evil to those to whom you least of all should have done it, namely, yourself, your friends, your country, and us both, — we shall be indignant with you so long as you live ; and our brothers, the laws in Hades, will not receive you favorably, knowing that you attempted, as far as you were able, to destroy us. Let not Crito, then, persuade you to do what he advises, rather than we.”

“ *These things, my dear friend Crito, be assured I hear as the votaries of Cybele seem to hear the flutes. And the sound of these words booms in my ear, and makes me incapable of hearing anything else.*”

And thus in language as strongly, if not more strongly, implying an audible voice, than any which he uses with regard to the so-called Demon, he gives the summary of the argument which by his own reason he has just eliminated in conversation with Crito. And in this there is no word whatever of the “ Voice.” Socrates then acknowledged himself to be ever acting under the Divine will, which, when impulsive, he calls  $\delta\theta\epsilon\sigma$ ; when reasoning,  $\tau\alpha$ , or  $\tau\iota\delta\alpha\mu\omega\nu\sigma\tau\mu\epsilon\sigma\tau\omega$ . All men thus acting who obey the Divine will, this influence was only so far *peculiar* to him as he was ever recognizing it, making it a part of his confessed creed ; and, from this constant attention to it, becoming ever more conscious of it.

Though this seems to have been perfectly understood by his friends, yet from various causes a different impression arose subsequently. For purposes of their own,

his accusers interpreted this mode of speaking into an attempt to introduce strange gods into Athens, and to throw discredit upon the ancient deities. His friends again, and his admirers in after times, personified this Voice, by way of magnifying, as they supposed, the importance of their master, as having been under an especial supernatural influence. And lastly, other writers have brought it forward as a proof that the pagan philosophers had commerce with evil spirits. Thus, Tertullian, in his "Apology," says that "Socrates undertook nothing without the privy counsel of his demon ; and no wonder, when this familiar is said to have kept him close company from his childhood to the conclusion of his life,—continually, no doubt, injecting dissuasives from virtue."

"That which Plutarch and other admirers of Socrates conceived as a Demon or intermediate Being between gods and men, was looked upon by the Fathers of the Christian Church as a devil ; by Le Clerc, as one of the fallen angels ; by some other modern commentators, as mere ironical phraseology on the part of Socrates himself."\*

3. That the reveries of Socrates were of the nature of ecstasy, or trance, is unsupported by any evidence ; there is, however, some to the contrary. For, having fallen into one of them on his way to the "Banquet" with Aristodemus, he withdrew into a porch, and stood still, as in contemplation ; and a servant having been sent out to summon him, he *refused* to come in. All this bears no similarity to the insensibility of trance. As before remarked, they were probably instances of profound meditation.

4. His belief in dreams can scarcely be gravely brought forward as even a collateral proof of unsoundness of mind. This was the age when oracles, omens, and dreams were

\* Grote's "History of Greece," Vol. VIII. p. 560.

counted amongst the most important guides in all matters ; and if on one or two occasions Socrates showed that he was not entirely free from the belief of his country, it can scarcely be considered a ground for reproach. Much more surprising would it have been had not some tincture of superstition adhered in those days, even to so original and gigantic a mind as his.

5. We need not examine in detail the alleged instances of prophetic power which he claimed. On some few occasions he did predict what the result would be, as to good or evil, of certain both personal and political acts. But he generally gave the reasons for these conclusions, as has been before remarked concerning the restraining power of the Demon, derived from ordinary rational laws. On this point Mr. Madden observes in his "Phantasmata" : —

"It may be presumed that the Demon of Socrates was nothing more than the rectitude and force of his judgment, which, acting according to the rules of prudence, and with the aid of long experience supported by wise reflections, made him foresee the events of those things with regard to which he was either consulted by others or deliberated upon himself."

6. Socrates was undoubtedly a very eccentric man ; but eccentricity is not insanity. He was certainly guilty of having a hole in his coat ; he went about barefoot ; if he had no supper, he would sometimes prefer to go without rather than ask for one. A very tiresome man, too ; for, like a gad-fly (to use his own expression), he would fix himself upon some puffed-up sophist, and with his endless, "Tell me, now" — "But explain to me" — he would drive the unfortunate wight into such a maze of contradictions as to expose his profound ignorance always to the bystanders, and sometimes to himself. He could not forget this even when before his judges. If

Melitus could feel at all, he must have wished himself rather in the place of the accused than the accuser. But in all this there is no sign of madness ; perhaps this must be sought in his moral eccentricities ; for he was temperate in a circle where the drunken Alcibiades was held to be the type of all that was excellent in man ; he was pure where impurity assumed its most disgusting aspects ; he was virtuous and upright where selfishness was the only recognized law ; he was modest where bloated self-conceit and intellectual pride were rampant ; above all, he was poor, when he might have had boundless wealth.

As to his positive and direct claims to be considered a man of sound mind, these are sufficiently illustrated by the themes of his perpetual teaching,—a teaching that only ended with his life. These were, modesty, self-distrust, the necessity for learning, love of parents, temperance, chastity, obedience to the laws, piety towards the gods, faith in their providence, and the recognition of their benefits ; a firm belief in the immortality of the soul, and the certainty of a future state of rewards and punishments, according to the deeds done on earth.

In reference to the latter themes, one passage from the "Phaedo" merits quotation, as indicating strongly the very far advance which he had made in penetrating things truly divine. Having enumerated certain vices, he adds :—

" True virtue is a purification from such things ; and temperance, justice, fortitude, and wisdom itself are a kind of initiatory purification. And those who instituted the mysteries for us appear to have been by no means contemptible, but in reality to have intimated long since that whoever shall arrive in Hades unexpiated and uninitiated, shall lie in mud ; but he that arrives there purified and initiated shall dwell with the gods."

We may not dwell further upon the character and teaching of this wonderful man. We protest against the endeavors to demonstrate a morbid alienation in the mind of one to whom, of all others, philosophy is most indebted ; and conclude with Mr. Grote, that " no man ever looked upon life with a more positive and practical eye ; no man ever pursued his mark with a clearer perception of the road which he was travelling ; no man ever combined in like manner the absorbing enthusiasm of the Missionary with the acuteness, the originality, the inventive resource, and the generalizing comprehension of a Philosopher."

## THE AMULET OF PASCAL.

*A fragment of Biography; intended as a second illustrative Appendix to "Illusions and Hallucinations."*

"His was one of the rare minds, apparently adapted, almost in equal measure, to the successful pursuit of the most diverse departments of philosophy and science, of mathematics and physics, of metaphysics and criticism. Many have transcended him in *knowledge*; . . . but in *inventiveness* few have been his equals; few, even in mathematics, while in moral science, the science of man, we know nothing out of Bacon and Shakespeare that will bear comparison in depth, subtlety and comprehensiveness, with some of the *thoughts* of Pascal. . . . Endowed with originality the most active and various, all that he did was with grace. . . . His just image is that of the youthful athlete of Greece, in whom was seen the perfection of physical beauty and physical strength. . . . The moral aspects of Pascal's character are as inviting as those of his intellect. He is one of the very few who as passionately pursue the acquisition of moral excellence as the quest after speculative truth; who, practically as well as theoretically, believe that the highest form of humanity is not intellect, but goodness. . . . Few men have ever dwelt on the idea of moral perfection, or sought to realize its image in themselves, with more ardor than Pascal.

"Upon all the great features of his moral character one dwells with the serenest delight. Much as he is to be admired, he is more to be beloved. His humility and simplicity, conspicuous as his genius and acquisitions, were those of a very child. . . . His perfect love of truth was beautifully blended with the gentlest charity; and his contempt of fraud and sophistry never made him forget, while indignantly exposing them, the courtesies of the gentleman and the moderation of the Christian."

THE character of Pascal here introduced is from the pen of Mr. Henry Rogers, the author of the "Eclipse of Faith," in the *Encyclopaedia Britannica*. Our object in quoting it at such length is special. There are those, and not a few, of even thoughtful men, who consider the

existence of an illusion or hallucination, *not corrected* by the understanding, to be an attribute necessarily of an unsound mind, — in short, of an *insane person*. This position we do not hold, and as a moral proof to the contrary, we bring forward the case of Pascal. He was the subject of certainly *two* hallucinations, one of which was *probably* never corrected by reason ; with regard to the other, sense and reason alike continually impressed upon him its unreality, yet not the less did it constantly prey upon his mind, influence his conduct, and affect his emotional nature. Yet it would be a strange perversion of terms, to call the man, who by his brilliant genius, single-handed, almost annihilated the power of the great order of the Jesuits, a “madman !”

The case of Pascal differs from that of Socrates, discussed in the last paper. We have there given reasons for disbelieving that Socrates was the subject of any delusion. But it appears certain that Pascal was so. Yet it is not possible to do otherwise than class these two men together as those who have not been for a generation, or a century, but for all time. To comprehend the full force of the incident which is the subject of this sketch, it is necessary to enter into a very brief detail of some of the circumstances of Pascal's early life, chiefly as regards his medical history.”<sup>18</sup>

At a very early age, Pascal evinced great peculiarities of the nervous system. When not more than a year old, he had a very serious illness, accompanied by two features of a peculiar kind. He could not bear the sight of water without being very angry ; and the sight of his father and mother *together* always made him scream violently, although his affection for both singly was very strong. As a sequel to this illness he seemed to die, and continued for twelve hours in such a state that he could not be supposed to be alive. After this he slowly

recovered, one of the earliest signs of amendment being, that he could bear to see water poured out from one vessel to another.

We will not dwell upon the remarkable precocity of genius which he manifested, as that belongs to his general biography. Yet to show how preternaturally his faculties were excited, it may be mentioned that although his parents endeavored to restrain his development, at the age of ten he had propounded an acoustic theory in advance of the views then entertained ; at twelve, he had evolved geometry from his own reflections ; at fifteen, he composed a treatise on conic sections, which Descartes refused to believe in as having proceeded from so young a mind. Thus, probably, he at once exalted and injured a naturally delicate and sensitive nervous organization.

At the age of eighteen his health began to fail, and it is in evidence on his own authority, that "from this time he never ceased to suffer." What was the precise nature of the sufferings is not very clear, — delicacy, fatigue, headache, sometimes violent, — probably a general *malaise*, rather than a disease.

When twenty-three years of age he had an attack of partial paraplegia, being so weak from his waist downwards that he could only walk with crutches. This lasted about three months, and then disappeared. He then resumed his arduous labors in physical science ; always in suffering, but never relaxing. He consulted physicians, but the history of his medical treatment is melancholy and need not be pursued. Finally, his constantly failing strength, his "insupportable headaches," and many other ailments, compelled him to sacrifice, for a time, all mental exertion ; and he resolved to mix, to some extent, with the world, and amuse himself.

It was whilst *in the world*, about three years after this, viz. in October, 1654, that the great *cardinal* event

of his life occurred. One day he was crossing the *Pont de Neuilly* in a coach drawn by four or six horses, when the first pair took fright, and drew the coach towards a part of the bridge where the parapet was broken down. They had the narrowest possible escape from being thrown over into the Seine. The horses did fall in, but fortunately the traces broke, and the carriage remained almost suspended over the brink.

This accident inflicted a severe blow on his nervous system. "Snatched by a miracle from such peril, he reflected upon the dreadful result to his eternal salvation, had he been called away while mixing with the frivolities of the world." He resolved to break forever with all worldly connections. And this resolution he carried out; he commenced to lead a life more retired and humble than before, and hoped to reconcile the exercise of the most exalted piety, with the continuance of his ancient studies. "But, says the *Recueil d'Utrecht*, God, for whom this was not enough, *took from him all this vain love of science*; and, as proof of his will and designs, very shortly *sent him a vision*."

But before noticing this vision, it is necessary to state that, for the seven or eight years of his life succeeding this accident, Pascal was subject to an hallucination, or "false sensation," the immediate consequence of the accident. In his nights and days of suffering, one constant aggravation of them was the sensation as though a chasm or precipice was close upon his side, over which he must fall. His reason told him that the sensation was a delusion, but feeling was too strong for reason; and very often he could not sit at ease, unless fortified on the left side by a chair, or some solid obstacle, — the left being the side of the bridge on which the accident had so nearly occurred.

We arrive now at the history of the vision, — the

Amulet,—the supposed or real hallucination. After the death of Pascal, there was found, sewed within the folds of his doublet, a parchment, on which was a very remarkable inscription, and containing within its folds a paper on which was a copy of the same. Nothing had been known of this during his lifetime; he had evidently sewed it in originally himself, and himself removed it, as change of garments required. He had never mentioned to any one the event to which there was allusion, so that the interpretation can only be conjectured, but with so much probability that there is not much danger of erring seriously.

The document began and ended with the sign of the Cross. After the initial mark, the *date* was inserted with great exactness, as “The year of grace 1654, Monday, the 23d of November.” Then follow the saints’ days, and after that these remarkable words: “From about half past ten in the evening until half past twelve, FIRE.” Then a series of ejaculations, devotional, ecstatic, and renunciatory. The greater part might have been taken for notes for contemplation, and suggestions for after thought. But this would not be consistent with the words above quoted, nor, above all, with the evident pains taken to keep a constant remembrance of some event, occurring on the date, always at hand. It was Condorcet who first directed special attention to this document, under the name of the “Amulet of Pascal.”

There can be little doubt, considering all the evidence, that Pascal supposed himself to have been favored with a vision of *Fire*, probably a globe of fire, on which was the mark of the Cross, the sign and token of the certainty of his salvation. “God had been the one idea of his life, and this idea was a great image, reflected in all his writings. Under great spiritual exaltation, on

the night of the 23d of November, 1654, the image has left the mind, has become objective ; it has taken form, and the *vision* has appeared." Certain it is, that from this time forward all mundane matters and affections became wellnigh dead to him, and he was devoted, body and soul, to the work of his salvation and that of others.

The remainder of the *physical* life of Pascal was one of asceticism and suffering. It would be unnecessarily painful to pursue the details. He lived some years longer, and finally died, suffering great torments from colic, convulsions, and most intolerable headaches, on the 9th of August, 1662.

His brain was examined after death ; and although the pathology of that day is not easily comprehended now, it seems clear that there was some remarkable alteration both in the skull and brain. The former was almost entirely without any mark of suture, and the latter had two points of softening "in or around which some blood was effused."

Any extended comment on such a case would be superfluous. Whether the event here noticed was a real hallucination, or a dream, recognized and known as such, but the remembrance of which was cherished as an epoch in mental history, the lesson is the same as regards the effect that may be produced on a nervous organization of such exquisite sensibility, by a combination of natural and moral causes such as we have reviewed. Socrates was not mad, neither was Pascal, yet under the influence of mental strivings and convictions, one spoke and the other acted as though influenced by sounds and sights not usually vouchsafed to sane men.

The practical moral of the whole is, that the mind of man must not rashly be reduced to categories, nor must every one who *appears* to have a delusion be hastily pronounced insane and irresponsible.

## VI.

### ON SOMNAMBULISM.

**PROBLEM :** *To what extent may we be made the unconscious playthings of our physical organization ?*

IN what are called by courtesy "the good old times of good Queen Bess," our ladies could eat like our modern ploughmen (if accounts be true), and our ploughmen like boa-constrictors. In those days the digestive apparatus was both the strong and the weak point of the system : they could get an immensity of work out of it ; and as a supplement, its disorders, as surfeits, fevers and inflammations, were rife among them. The nervous system is now the strong and the weak point ; we can get a greater amount of work out of brain and nerve than our ancestors could, and the consequence is that we have a greater preponderance of neuropathies and psychopathies, and all manner of strange nervous phenomena, of a morbid and quasi-morbid character, than has ever been observed before. Our polysyllabic friend, Feuchtersleben, says that "the fundamental character of the present generation is a predominant erethistic vital debility" ; and although the expression is not too comprehensible to the general reader, the idea is correct enough, if he means (as we believe he does), that there is a tendency to a morbidly energetic performance of certain functions, more especially of those connected with the nervous system. Hence, perhaps, it arises that notwithstanding all our boasted and all our real intellectual ad-

vancement, we do no discredit to our forefathers as regards the energy and zeal with which we bear our part in the follies, weaknesses, and insanities of our race : bravely do we bear up our character for credulity and its inevitable attendant, scepticism ; and while we profess to look down with lofty pity upon the benighted ignorance that persecuted those who were accused of witchcraft or demoniacal intercourse ; that looked upon the prophecies of Cevennes and the *convulsionnaires* of St. Medard as veritable influences from on high ; that attributed the phenomena of natural science to a power derived from evil spirits, — we have our own innumerable forms of spiritual fanaticism, our Jumpers, Shakers, Apostle-Baptists, Socialists, Mormons, &c. Again we have a recent and peculiar manifestation in the spiritualism of our age, which requires a careful investigation of the morbid and exceptionable forms of mental and nervous activity. This spiritualism widely prevails in all classes. We have tables that turn and spirits that rap ; yea, clairvoyants that predict the future, reveal the distant, or communicate, like Holmes, the last compositions of Byron and Shelley in their new abodes.\*

Doubtless there is a large element of imposture in the production of many of these phenomena, intended to amuse or extract money from the credulous ; but the whole cannot be summarily accounted for and dismissed on this hypothesis alone ; the testimony to their reality is in some cases too high to be entirely discredited :

\* The spirit-faith in America is computed to embrace two millions of believers, and hundreds of thousands in other lands, with twenty thousand mediums. These include men in all ranks of society, from the highest to the lowest. The daily, weekly, monthly, and quarterly journals devoted solely to *Spiritualism* and its doings may be counted in the United States, we believe, by scores. (This was the case ten years ago; I do not think the numbers are by any means decreased now, — 1869.)

moreover, men do not go mad upon a voluntary imposition ; and it is said that of the lunatics confined in asylums in the United States, there are seven thousand five hundred and twenty who have become so entirely owing to this "spirit-faith."

In the Dark Ages, when the secrets of natural science were known but to a few, those adepts who could astonish the vulgar, and even the learned, by flashes, explosions, and apparitions, were accounted to be assisted by familiar spirits ; whilst they themselves knew, as all the world does now, that they were but taking advantage of the ordinary properties of matter. So in the present day, when men see others speaking, writing, and moving, apparently unconsciously, and exhibiting other exceptional phenomena of a psychical nature, an idea becomes extensively received (as we have seen above) that there is something supernatural in all this, and recourse is had, as of old, to the theory of spiritual agency to account for it. Whilst those who are familiar with the *modus operandi* of the nervous system in its normal and abnormal or exceptionable conditions, recognize such phenomena as old acquaintance dressed in guise more or less new ; and require no spirit more active, tricksy, or mischievous than itself to stand godfather to its own strange vagaries.

None of the phenomena of life are, strictly speaking, explicable, or traceable to their ultimate cause, but they are reducible to general expressions, and susceptible of illustration by analogies, and classification according to relations ; and it is with the intention of indicating the natural position of the phenomena alluded to, in a rational classification, that we propose to introduce to the notice of our readers some of the more exceptional manifestations of the nervous system, both in its bodily and its mental relations. That form which we have selected for brief illustration in the present paper com-

prises both these, and will be found to include in itself a *résumé* of almost all the accounts which seem so wonderful, when attached to the history of a spiritual séance. It is also especially applicable as an illustration of our intended purpose; inasmuch as it has been as much the subject of superstitious conjecture as the so-called *spiritual* manifestations of the present day. Horstius informs us that somnambulists were called the "*ill-baptized*," the omission of part of the ceremony being supposed to have subjected them to the influence of spirits. He strongly opposes this view, and considers somnambulists to be truly prophets, and under the immediate influence of angels. Like all other phenomena which appear to pass the bounds of the average knowledge of mankind, these have been summarily accounted for by supernatural influence.

In common with all animals which possess well-defined sensuous relations with the external world, man exists in two distinct, and, so far as the organs of these relations are involved, opposed conditions,—one of waking and one of sleep, labor and repose alternating. Under certain limitations, this alternation appears to be a general law of organization, more or less modified according to the varying complexity of the functions of life. It is true that in sleep only the animal or relational functions are at rest; the repose of the tissues concerned in vegetative life is of much shorter duration, action and rest recurring every instant. It is in accordance with the same principles that we find the amount and regularity of sleep in great measure proportionate to the development of relational life. In the higher carnivorous vertebrata, where the muscular and nervous tissues are at the maximum development, sleep is much more required than in those of lower type, where the nutritive functions appear predominant; and in those lowest forms of

organic existence which still appear to have some trace of animal nature, but whose chief and entire function appears to be assimilative, we have no evidence of the occurrence of the phenomenon at all. As might be expected, it is in man, where the balance of the two classes of functions is most evident, and where the operations are still more complicated by the super-addition of an intellectual nature, that the periodical recurrence of repose is most marked, and its regularity most essential to the well-being of the individual.

It will materially assist our investigation into some of the interesting phenomena involved in our subject, if we briefly examine the points of contrast between these two opposed conditions, as well as the points of resemblance, and those states in which they appear to trespass upon each other's domains.

What are the characteristics of a healthy waking man, *mens sana in corpore sano*? — As the basis of all his knowledge, and of all his actions, there is a profound conviction and consciousness of distinct existence and personality, a strong intuitive and undefinable, yet irrefragable, sense of the unchanging "I." (It is necessary to mention this fundamental truth, because in dreaming, and certain forms of insanity, it is very frequently utterly lost from the mind.) This consciousness is modified and intensified by the evidence of the senses, — these respond instantaneously and accurately to their own appropriate stimuli, the eye to the undulations of light, the ear to the vibrations of sound, and so on with the other senses, none of which can supply the place of another; nor is the general sense of touch ever capable of being exalted to the condition of a special sense. But not only do these organs take cognizance of the external world and its phenomena, but the mind receives the impressions from them, and is prepared at once to exercise upon them

its various functions ; memory, imagination, fancy, comparison, judgment, calculation, all these, and all other faculties into which metaphysicians have dissected the Divine spark, are either in activity, or ready to be so, at the command of the will. Finally, the muscular system obeys accurately the mandates of the will.

So far as to the positive phenomena, — but the negative indications of health and wakefulness are not less important for our purposes. These may be briefly summed up in a few words, — *complete unconsciousness of all organic or vegetative processes*. And during this time a waste, both of substance and of vital energy, is going on, which requires the periodical return of sleep for its repair, the phenomena of which condition we have now to notice.

“ Somne, quies rerum, placidissime, Somne, Deorum,  
Pax animi quem cura fugit — ”

Thus by negations is sleep invoked by the ancient poet ; and certainly sleep in its perfect form is only to be described by negations, with the exception of the continuance of the organic functions, which remain nearly unaffected, or in some cases increased in intensity, as Hippocrates justly observed, *somnus labor visceribus*. Perfect sleep is characterized by a complete and profound unconsciousness of everything, even of existence, — the senses are closed against all impressions, the limbs have become relaxed and inactive, even volition, in common with every other faculty of the mind, is in abeyance, — phenomena well and elegantly portrayed by Lucretius, —

“ Ubi est distracta per artus  
Vis animæ —  
Deibile fit corpus, languescunt omnia membra,  
Brachia, palpebreque cadunt, poplitesque procumbunt.”

Many extraordinary histories are related in illustration of the extent to which insensibility to outward impres-

sions may be carried ; one will suffice as an extreme case. It is quoted by Dr. Carpenter, with tokens of credence, from Mr. R. Smith, late senior surgeon to the Bristol Infirmary, under whose observation it occurred. "A travelling man, one winter's evening, laid himself down upon the platform of a lime-kiln, placing his feet, probably numbed with cold, upon the heap of stones newly put on to burn through the night. Sleep overcame him in this situation ; the fire gradually rising and increasing until it ignited the stones upon which his feet were placed. Lulled by the warmth, the man slept on ; the fire increased until it burned one foot (which probably was extended over a vent-hole) and part of the leg above the ankle, entirely off, consuming that part so effectually that a cinder-like fragment was alone remaining, and still the poor wretch slept on ; and in this state was found by the kilnman in the morning." He experienced no pain when he awoke, but he died in hospital about a fortnight afterwards. It appears probable, however, that the atmosphere in this case was charged with carbonic acid, and that the sleep was nearly approaching to, if not altogether identical with, coma.

Sleep is not always, nor even commonly, thus profound ; yet, even under its ordinary aspects, it presents such a picture of inactivity as to have been considered by many, both poets and philosophers, as nearly related to death. "Sleep," says Macnish, "is the intermediate state between wakefulness and death." Diogenes is said to have spoken, in his last moments, of death and sleep as brother and sister. Cicero speaks thus of the affinity, — *nihil videmus morti tam simile quam somnum* ; and Ovid in like manner asks, —

"Quid est somnus, gelidæ nisi mortis imago ?"

Yet the analogy is much more poetical than true ; sleep

is as far removed from death as muscular repose is from paralysis. It is probably the normal state of foetal existence, and throughout life it is the great agent in repairing the ravages of constant molecular changes, and averting the ever-threatening somatic death.

The most usual form of sleep is by no means so profound as that which we have described ; some of the functions, both animal and intellectual, are often at work, and dreaming, with or without accompanying action, is the result. In such a case, a kind of consciousness is restored, yet often with peculiar modifications, one of the most remarkable being the loss of that distinct sense of individuality by which the waking man has been said to be characterized. Imagination and memory are both awake at times more active than in true wakefulness ; but they play strange tricks with each other and with their possessor. He can contemplate his own murder, or attend his own funeral, without any feeling of surprise or awe ; he can commit the most fearful crimes without any horror ; he sees the most tremendous convulsions of Nature and the utter subversion of her ordinary laws without astonishment ; he converses with the dead, yet asks not how they have escaped their prison-house ; and with the living, whom he knows to be separated from him by seas and continents ; and all seems natural and a matter of course. Truly has sleep a thousand sons (*naturum mille suorum*, Ovid)

Such are the ordinary and typical forms of man's two lives, — the waking and the sleeping life ; yet in this, as in all other instances, nature does nothing by sudden leaps (*nihil per saltum*). As night and day are united by twilight, — as the two great divisions of organic existences merge into each other through the scarce distinguishable classes of phytozoa and zoophyta, — as the various genera of both sub-kingdoms are

united by links very nearly allied to both the neighbors, — so waking allies itself to sleep by *abstraction* and *revery*, — so sleep allies itself to waking by *dreaming*, by *sleep-talking*, and by the *sleep-vigil*, commonly called Somnambulism. So closely allied are the extreme forms of *revery* and of somnambulism, — so difficult in some cases is it to state the precise diagnostic marks, — that a few remarks on the former will properly precede and illustrate our more especial theme. *Revery* is a state of the mind, in which it wanders to a thousand different subjects independent of volition, — the attention cannot be directed to any one point ; on the other hand, *abstraction* is characterized by the total absorption of the mind in one subject, the senses taking cognizance *only* of such matters as are connected with the subject under examination. Distinct as are these two conditions in their origin, they are often confounded together ; and, indeed, the external phenomena are similar, being summed up in a more or less complete insensibility to surrounding objects or influences. These conditions will be investigated in the succeeding paper on "Revery and Abstraction." We should not have dwelt so long on these preliminary topics, but for the light which they seem calculated to throw upon the connections of the Sleep-vigil, — a term which we prefer to Somnambulism, inasmuch as this latter expresses only the activity of one function, — locomotion, — which is by no means the most remarkable of the phenomena.

From the state of profound unconsciousness above described, to a condition with difficulty distinguished from waking, we meet with every possible gradation. The faculties one after another awake, until in some cases we meet with perfectly lucid somnambulism. The first step to this is *dreaming*. Dreams for the most part are incoherent, shadowy resemblances of scenes and ideas be-

fore experienced, most frequently in new and grotesque combinations. The reason and judgment are in abeyance, — we reason, and feel satisfied with the justice and propriety of our conclusions ; we compose verses which charm us with their elegant cadence, yet if we can recall these processes when we awake, our arguments are nonsense, and our lines doggerel. Much more rarely, the dream is not a repetition merely of past thoughts, but is *supplementary* to the day's exercises, — what has been left undone in waking moments is finished, and well finished, in sleep ;\* compositions which have over-tasked the waking mind have been known to be *dreamed out*, and accurately remembered afterwards ; new ideas are likewise originated, as was Coleridge's "Kubla Khan," during sleep. Further illustrations may be found in Dr. Good's "Book of Nature," and in "The Philosophy of Sleep," already quoted.

But the dream is occasionally so vivid as to awaken the power of voluntary motion, and the dreamer enacts or speaks his dream. Hence arise gestures, muttering, talking, walking, and the performance of the most complex operations, in sleep. We observe the elements of these actions not only in man, but in domestic animals. The dog will growl, and move uneasily in his sleep, or start up suddenly and bark, evidently in obedience to his dreaming ideas. From these elementary actions, up to the most perfect state of sleep-vigil, we have every gradation, indicating the perfect identity of the phenomena as to essential nature. It very frequently happens that the dream having been spoken or acted out, the *polarity* of the mind with relation to that subject is exhausted, and the dream is forgotten, so that the sleep-walker is in general quite unconscious, not only of the

\* See "Cyc. of Anat. and Physiology," Art. "Sleep." By Dr. Carpenter.

act itself, but of the train of thought which excited or attended it.

Having thus traced the condition of the mind through its successive stages of complete wakefulness, reverie, abstraction, sleep, and dreaming, to a pseudo-waking and active state again, we shall now give a few illustrations of the phenomena of Sleep-vigil, beginning with the simplest forms, viz., where the sleeping acts are mere mechanical repetitions of daily performances ; and advancing to those of great intellectual complication, that we may be better prepared, by a collection of facts, inductively to ascertain the true and essential nature of the phenomena.

The observation of sleep-walking or somnambulism is of very ancient date : two varieties were noticed, one of which we shall pass over very briefly, as being unimportant, except as a collateral illustration ; it is that where the subject of it is engaged in some occupation which he continues although sleep overtakes him. Thus Galen fell asleep whilst walking, and continued to do so until he struck his foot against a stone. Felix Plater relates that he himself often fell asleep whilst playing the lute, which he continued until the instrument fell and awoke him. He also states that a friend fell asleep whilst reading aloud, and read an entire page whilst sleeping. It is said to be not unusual for soldiers upon the march to fall asleep on a fatiguing journey, still keeping up with the rest ; this was often noticed during the retreat from Moscow.

Hippocrates first notices the true somnambulism, the imitation of action in accordance with sleeping ideas : “*Quosdam in somno lugentes et vociferantes vidi, quosdam exsilientes et fugientes ac diripientes quoad excitarentur.*” Aristotle also notices it.

It is those acts which are most habitual by day that

are most frequently re-enacted by night, and these are sometimes of an extraordinary nature. The simplest are those connected with visiting the various scenes of labor. A young man being asleep in the pump-house of the mine in which he worked, rose and walked to the door, against which he leaned some time ; then he walked to the engine shaft, and safely descended twenty fathoms, where he was found with his back resting on the ladder. When he had been with difficulty awoke, he was quite at a loss to account for his being there.

Those who ride much on horseback will either do so in their sleep, or will imitate the action, as in a case related by Petrus Diversus, where a young man climbed up, and mounted across the battlements, where he spurred vigorously, and was much alarmed, on awaking, at the risk he had run.

Others will even swim for a considerable time without awaking, of which there are many instances on record. Dr. Franklin relates that he himself fell asleep whilst floating on his back, and slept for an hour.

In a case related by Macnish, occurring on the coast of Ireland, the sleeper walked through a difficult and dangerous road nearly two miles, and, plunging into the water, had swam a mile and a half, when he was discovered, still fast asleep.

Martinet mentions a case of a watchmaker's assistant who had an attack of somnambulism every fortnight, and in that state was accustomed to arise and do his usual work with as much accuracy as when awake. Dr. Gall mentions a miller, who every night arose and set his mill working, recollecting nothing of what had passed in the morning. Instances are innumerable of these mechanical employments being carried on in sleep, — it is needless to multiply them, — we pass on to cases of a more complex character. In somnambulism the eyes are

often shut, and if open, they are evidently not in a state adapted to ordinary vision, as will be described afterwards ; yet feats can be performed with safety and accuracy, which the individual would never dare to attempt when awake. An account in illustration we extract from the "Philosophy of Sleep" :—

"A story is told of a boy, who dreamed that he got out of bed, and ascended to the summit of an enormous rock, where he found an eagle's nest, which he brought away with him and placed under his bed. Now the whole of these events actually took place ; and what he conceived on waking to be a mere vision was proved to have had an actual existence, by the nest being found in the precise spot where he imagined he had put it, and by the evidence of spectators, who beheld his perilous adventure. The precipice which he ascended was of a nature that must have baffled the most expert mountaineer, and such as, at other times, he could never have scaled."

These adventures are not always unattended by danger. Schenckins relates an instance where the somnambulist, in attempting to get out of a window, fell and broke his thigh. A similar accident happened to a Mr. Dubrie, a musician in Bath.

But the phenomena of somnambulism become much more interesting and pregnant with meaning when the manifestations of activity are more specifically intellectual, and where at the same time the state of the special senses can be made the subject of observation. The senses and the intelligence appear to be closed to ordinary influences, yet susceptible to those connected with the dominant train of thought, sometimes to an almost preternatural extent. We will, however, for the present, proceed with the enumeration of facts, as related by credible writers, leaving our analysis of them to a later period.

Henricus ab Heers relates an instance of a friend of his own, who, being unable to finish some verses to his satisfaction by day, arose in his sleep, finished them, sought out his friends, read them, and retired to rest again. It was with difficulty that he was made to believe all that had occurred when he awoke.

Two very instructive cases are quoted by Dr. Pritchard from Muratori. The first relates to a young Italian noble, Signor Augustin, who was accustomed to walk and perform a variety of acts in his sleep. The attacks were usually announced by a peculiar manner of sleeping on his back, with wide-open, staring, unmoved eyes. Vigneul Marville, an eye-witness, gives the following account of one occasion : "About midnight, Signor Augustin drew aside the bedclothes with violence, arose, and put on his clothes. I went up to him, and held the light under his eyes ; he took no notice of it, although his eyes were open and staring." After performing a variety of movements about the house, and seeking for many things, appearing occasionally to hear noises that were made, and to be frightened by them, "he went into the stable, led out his horse, mounted it, and galloped to the house door, at which he knocked several times. Having taken back his horse, he heard a noise which the servants made in the kitchen, and went to the door, holding his ear to the key-hole, and appeared to listen attentively." He afterwards went to the billiard-room, and enacted the motions of a player. He then went to the harpsichord and played a few irregular airs. "After having moved about for two hours, he went to his room, and threw himself upon his bed, clothed as he was, and the next morning we found him in the same state ; for, as often as his attack came on, he slept afterwards from eight to ten hours. The servants declared that they could only put an end to his paroxysms either by tickling the soles of his feet, or by blowing a trumpet in his ear."

The case of Negretti is related by the same author, and is valuable as having been separately watched by two physicians, Righellini and Pigatti. He was a servant, and had walked in his sleep from his eleventh year. He would often repeat in his sleep the accustomed duties of the day, and would carry trays and glasses about, and spread the table for dinner with great accuracy, though his eyes were always firmly closed. Indeed, it was apparent that he could not see, as he frequently struck against doors, and objects placed in unaccustomed positions. He sometimes carried a candle ; but a bottle substituted for it seemed to do as well. His sense of taste appeared to be very imperfect, as he would eat cabbage for salad, drink water for wine, and take coffee for snuff, without appearing in any case to detect the substitution.

In other cases the senses are more awake, and the intelligence more active. Castelli, whose case is related by Francesco Soave, was found one night asleep, in the act of translating from Italian into French, and looking out the words from a dictionary. When his candle was extinguished, he arose and went to seek another light. When any one conversed with him on any subject on which his mind was bent at the time, he gave rational answers ; but he seemed to hear nothing that was said to him or near him on other subjects. His eyes also seemed to be only sensible to those objects about which he was immediately engaged, and were quite fixed ; so much so, that in reading he turned the whole head from side to side instead of the eyes.

One of the most remarkable cases on record is related by the Archbishop of Bordeaux in the "Encyclopédie Methodique." It was concerning a young priest at the Catholic seminary, who used to rise in his sleep and write sermons. Having written a page, he would read it

aloud, and make corrections. "I have seen," says the archbishop, "the beginning of one of his sermons which he had written when asleep; it was well composed, but one correction surprised me. Having written at first the words "*ce divin enfant*," he had afterwards effaced the word *divin*, and written over it *adorable*. Then perceiving that *ce* could not stand before the last word, he had dexterously inserted a *t*, so as to make the word *cet*." He continued to write, although a card was held between his eyes and the paper. Did the history stop here, we should have a well-authenticated case of vision without the aid of the eyes. But the collateral circumstances show that this writing was accomplished, not by sight, but by a most accurate mental representation of the object to be attained, as will be further illustrated in our next case. For after he had written a page requiring correction, a piece of blank paper of the exact size was substituted for his own manuscript, and on that he made the corrections in the precise situation which they would have occupied on the original page. A very astonishing part of this report is that which relates to his writing music in this sleeping state, which it is said he did with perfect precision. He asked for certain things, and saw and heard such things, but *only* such things, as bore directly upon the subject of his thoughts. He detected the deceit when water was given to him instead of brandy, which he had asked for. Finally, he knew nothing of all that had transpired when he awoke; but in his next paroxysm he remembered all accurately, and so lived a sort of double life, a phenomenon which we believe to be universal in all the cases of exalted somnambulism.

A report made to the Physical Society of Lausanne, on this subject, contains by far the most elaborate and apparently trustworthy account of any we have

met with, concerning somnambulism. The observations were made upon a young gentleman named Devaud, aged thirteen and a half, of a strong constitution ; but with "a nervous system of peculiar delicacy, and of the greatest sensibility and irritability." We cannot give even an abstract of the entire report, which may be consulted at length in the "Encyclopædia Britannica," under the head of "Sleep Walkers"; but must content ourselves with such parts as may illustrate the condition of the special senses and faculties in this state. On one occasion he was attempting, at the commencement of his attack, to dress in the dark ; his clothes were mixed with others, and he could not find them ; but on a light being brought, he dressed readily. He heard certain sounds, but was insensible to others. "When he wishes to see an object, he makes an effort to lift the eyelids ; but they are so little under his command, that he can hardly raise them a line or two ; the iris at that time appears fixed, and his eye dim. When anything is given to him, and he is told of it, he always half opens his eyes with a degree of difficulty, and then shuts them after he has taken what was offered to him. The phenomena of his writing and correcting, even with a card interposed between his eyes and the paper, are related in almost precisely similar terms to those in the last-mentioned instance." The Academicians who drew up this report came to the following conclusions as regards the state of his senses : 1st, That he is obliged to open his eyes (which are usually closed), in order to recognize objects which he wishes to see ; but the impression once made, although rapidly, is vivid enough to supersede the necessity of his opening them again to view the same objects anew ; that is, the same objects are afterwards presented to his imagination with as much force and precision as if he actually saw them. 2d, That his im-

agination thus warmed, represents to him objects, and such as he figures to himself, with as much vivacity as if he really saw them ; and lastly, that all his senses, being subordinate to his imagination, seemed concentrated in the object with which he is occupied, and have at that time no perception of anything but what relates to that object. "These two causes united seem to them sufficient for explaining one of the most singular facts that occurred to their observation, to wit, how the young Devaud can write, although he has his eyes shut, and an obstacle before them. His paper is imprinted on his imagination, and every letter which he means to write is also painted there, in the place in which it ought to stand on the paper, and without being confounded with the other letters ; now it is clear that his hand, which is obedient to the will of his imagination, will trace them on the real paper, in the same order in which they are represented on that which is pictured in his head. This will only appear a satisfactory account of the matter, when we remember how much more accurately all muscular motions are performed in a state of somnambulism than at other times ; the mind is intent but upon one thing, and does that perfectly, undisturbed either by any influences from without, or by any confusion or complexity of ideas or endeavors within itself.

We have now to notice a class of cases which, presenting fewer anomalies in the activity of the organs of sense, are yet more remarkable than the preceding ones, considered as phenomena of sleep, inasmuch as there is very considerable freedom of intercourse with those around ; and the condition might naturally be considered as one of perfect wakefulness, but that everything which then happens is forgotten, and only remembered during the next paroxysm.

One of the most remarkable instances of this form of

somnambulism is that recorded by Dr. Dyce, of Aberdeen, and quoted by both Dr. Pritchard and Macnish. "The subject of the relation was a girl of sixteen ; the first symptom was a propensity to fall asleep in the evening ; this was followed by the habit of talking on these occasions, but not incoherently, as sleep-talkers are wont to do. She repeated the occurrences of the day and sang musical airs, both sacred and profane. Afterwards she became able to answer questions put to her in this state, without being awakened. She dressed the children of the family, still 'dead asleep,' as her mistress termed her state, and once set in order a breakfast-table with her eyes shut." She was taken to church, and appeared much affected by the sermon ; but on being questioned, after the fit was over, she denied ever having been to church, but in a subsequent attack, repeated the text and substance of the sermon. Having, by the connivance of a depraved fellow-servant, been ill-treated during one paroxysm, she forgot all about it when awake ; but during the next attack told it to her mother.

A singular and interesting account of a case of spontaneous somnambulism is graphically related by Dr. Carpenter (under whose care the patient was), in the "Cyc. of Anat. and Phys." Art. "Sleep." The peculiarity of the case was, the young lady passed into the sleep-walking and talking condition, not, as is usual, from the sleeping, but from the waking state. She could converse rationally, with one fundamental error or delusion ; but she only saw, heard, or understood those objects or ideas which were related to her train of thought ; on awaking, all was forgotten, but the same ideas revived and were continued regularly in the next attack. For the very remarkable details, we refer to the article mentioned.

These cases, singular and interesting in themselves, are perhaps still more so as forming a natural transition and bond of relation between true somnambulism and what has been called double consciousness, a peculiar diplo-psychical condition, upon the nature of which little light has hitherto been thrown by either metaphysician or physiologist.

In illustration of this peculiar affection, we shall mention three cases : the first two related by Professor Silliman, in the "American Journal of Science"; the third, from the "Medical Repository," by Dr. Mitchell.

The subject of the first case was a lady of New England, who became subject to what is called in the report delirium, — coming on suddenly, and going off again in the same manner, and leaving the mind quite sound. When in conversation, she would break off in the midst, and begin talking on some subject quite unconnected with the previous one, to which she would not again refer during the continuance of the delirium. "When she became natural again, she would pursue the same conversation in which she had been engaged during the lucid interval, beginning where she had left off, — sometimes completing an unfinished story or sentence, or even an unfinished word. When the next delirious paroxysm came on, she would continue the same conversation which she had been pursuing in the preceding paroxysm ; so that she appeared as a person might be supposed to do *who had two souls*, each occasionally dormant and occasionally active, and utterly ignorant of what the other was doing."

In quoting this case, Dr. Pritchard very properly remarks : "It is evident that although this affection is termed delirium, it was neither that state in the ordinary acceptance of terms, nor any form of madness, but one of *coherent reverie*."

The second case is thus quoted by Dr. Pritchard, from the same source : " An intelligent lady, in the State of New York, undertook a piece of fine needlework, to which she devoted her time almost constantly for many days. Before its completion she became suddenly delirious (?), and she continued in that state about seven years. She said not a word during this time about her needlework, but, on recovering suddenly from the affection, immediately inquired respecting it."

Our next case is so singular and anomalous in its details, that we might hesitate to classify it as one of somnambulism ; but we have as yet found no break in our series of phenomena, however strange, arising out of sleep, and the present instance seems so closely allied to those already related that we give it to complete the series. The subject was a young lady, of a good constitution, excellent capacity, and well educated. " Her memory was capacious, and well stored with a copious stock of ideas. Unexpectedly, and without any fore-warning, she fell into a profound sleep, which continued several hours beyond the ordinary term. On waking, she was discovered to have lost every vestige of acquired knowledge. Her memory was *tabula rasa*,—words and things were obliterated and gone. It was found necessary for her to learn everything again. She even acquired, by new efforts, the art of spelling, reading, writing and calculating, and gradually became acquainted with the persons and objects around, like a being for the first time brought into the world. In these exercises she made considerable proficiency. But after a few months another fit of somnolency invaded her. On rousing from it, she found herself restored to the state she was in before the first paroxysm, but was wholly ignorant of every event and occurrence that had befallen her afterwards. The former condition of ex-

istence she now calls the Old state, and the latter the New state; and she is as unconscious of her double character as two distinct persons are of their respective natures. For example: in her old state, she possesses all the original knowledge; in her new state, only what she acquired since. If a lady or gentleman be introduced to her in the old state and *vice versa* (and so of all other matters), to know them satisfactorily she must learn them in both states. In the old state, she possesses fine powers of penmanship; while in the new she writes a poor awkward hand, not having had time or means to become expert.

"During four years and upwards she has had periodical transitions from one of these states to the other. The alterations are always consequent upon a long and sound sleep. Both the lady and her family are now capable of conducting the affair without embarrassment. By simply knowing whether she is in the old or new state, they regulate the intercourse, and govern themselves accordingly."\*

All the phenomena occurring in such cases as those already related appear to be compatible with, at least apparently, perfect health. But sleep-walking and sleep-talking occasionally form a part of, or are engrafted upon, hysterical and cataleptic affections,— and then we see the proteiform symptoms of hysteria and the muscular and sensitive derangements of catalepsy added to the sufficiently singular conditions before enumerated. In catalepsy so complicated (and hysteria strongly simulates it frequently), it is usual to see the patient commence and end the paroxysm with the insensible symptoms proper to the disease; whilst the middle part (called the "live fit," in contradistinction to the beginning and end, which are called the "dead fit," in com-

\* "Philosophy of Sleep," note, p. 187.

mon phrase) is characterized by talking and various actions, evincing a peculiar kind of consciousness and sensibility to certain real or imaginary beings or objects ; whilst there is the most profound insensibility to all influences from without. Thus a conversation may be carried on with some imaginary interlocutor, with proper pauses for reply and rejoinder ; and with one fundamental error, that conversation may be coherent ; yet the sufferer may be pricked or cut without evincing any consciousness ; or the most pungent stimuli may be applied to the mouth, nose, or conjunctiva, with the same absence of result. The pages of medical history abound with records of such cases, but we forbear to quote, as we are at present more concerned with somnambulism in its physiological and psychical, rather than its pathological relations.

It will be useful to review briefly the various forms of Sleep-vigil found in the foregoing cases, so as to present an analysis of the phenomena. We have met with —

1. *Profound sleep.* — Unconsciousness.
2. *Dreaming.* — Consciousness, memory, fancy, imagination, — more rarely judgment and comparison.
3. *Acted dreams.* — All the former faculties enjoying a sort of wakefulness, and, at the same time, volition. This class is only intended to include gestures, &c.
4. *True somnambulism.* — Rising from bed, visiting accustomed or unaccustomed scenes, and performing various mechanical acts. Under this head we have seen the individual performing the most dangerous feats, and the command of the muscular system brought to the greatest perfection.
5. *True sleep-vigil.* — Here, in addition to the forego-

ing phenomena, many acts of the mind are performed, as judgment, synthesis, analysis, &c.; and the senses, though closed to ordinary influences, seem to be brought into some kind of activity. Here begins also double consciousness, as yet extending only to the sleeping state,—that is, the patient knows nothing of the sleeping acts when awake, though he acts, when asleep, as if upon a consciousness of what has passed when awake, repeating or completing the acts of that condition. But the various paroxysms of sleep-vigil are attended by a continuity of consciousness,—that is, the acts of one are remembered in the next.

6. *Complete double consciousness or double life.*—A new life, commencing and ending with deep sleep; utter oblivion of everything before passed; this condition alternating with the old life at uncertain intervals, and the paroxysms of indefinite length. This can scarcely be termed somnambulism, but is noticed as being so closely allied by many of its phenomena to that condition.

It will be evident from a careful consideration of these successive conditions, that somnambulism is not, as M. Willermay and many others consider it, an intermediate state between sleeping and waking (*un état intermédiaire entre la veille et le sommeil*).<sup>\*</sup> That in the slighter forms of the affection many of the faculties enjoy a sort of activity is clear; that in the higher forms of somno-vigil all, or nearly all, are in such a state that it is difficult to distinguish between these and their waking manifestations, is also evident; but inasmuch as the sleep appears to be more sound than ordinary; as the somnam-

\* " Dict. des Sciences Médicales," Art. " Somnambulism."

bulist never passes naturally from that condition to one of waking ; as there is some danger attendant upon the interruption of that state ; and as the mental and bodily activity for the most part is directed only to one class of subjects, — it is plain from all this, that this can be no transition stage to the natural waking activity of the functions : in its higher forms also, we are compelled to consider it as something more than the enacting of a dream, however vivid.

What is the condition of the various functions in the somno-vigil ?

Noticing first the most obvious, we see the muscular system perfectly under the command of the will, — often more powerful and accurate in its movements than at other times. The condition of the senses is subject to great variety.

1. The Sight. The eyes are sometimes closed, sometimes widely staring and fixed, sometimes agitated by a convulsive movement, the pupils widely dilated or extremely contracted, but in all conditions evidently unfit for ordinary vision, and almost always insensible to any light experimentally thrown upon them. Yet there are often unmistakable evidences of the recognition of objects, — they are often sought for, and found ; sometimes with a light, sometimes without ; generally the somnambulist finds his way perfectly in the dark, though some will be at great pains to get a light ; he will continue to write with the same accuracy as before when an opaque object is held between his eyes and the paper. Dr. Carpenter states that he has seen this in the artificial somnambulism produced by Mr. Braid's hypnotic process. What is the nature of this vision ? Can the general sensibility of the surface be in such manner modified as to serve the purposes of sight ? It is very improbable, yet such is said to be the case by many of those who

practise the various forms of artificial hypnotism. The solitary instance with which we have met, of any somnambulist remembering and relating the phenomena of vision, is to be found in the "Dict. des Sciences Médicales," *sub voce*. The writer, M. Willermay, speaks thus : "J'ai moi-même, étant très jeune, éprouvé quelques accès légers de somnambulisme, et il me semble que je voyais en dedans de ma tête ce que je voulais écrire, sans le secours des yeux."

2. The sense of Hearing is also found in very different conditions. Signor Ferari heard the slightest noise near him, but apparently misinterpreted it ; others are insensible to the loudest noises, but will hold conversations on subjects immediately connected with their specific train of thought.

3 and 4. The Smell and the Taste present similar contrarieties, sometimes being more sensitive than natural, sometimes less so, and sometimes perverted.

5. The Touch is the most active of all the senses, being as much increased in sensibility and accuracy as is the energy of the muscular system ; probably much of the information usually obtained by the special senses is acquired through the increased energy of this, or some modification of it.

But what is the proximate cause of all these phenomena, of all this mimicry of waking life ? What is the condition of the brain and mind during this state ? We have but little knowledge of the physical differences between the brain active and the brain at rest ; but we know that a difference does *potentially* exist, and that whilst the brain at rest is in a state of indifference to stimuli, the brain active is in a condition which may not unaptly be called *polarity*. By polarity in general is understood a state of preparedness to respond to special and specific stimuli, and one of indifference to all objects

not coming under this category ; thus the magnet is polar and responds to steel, at the same time being indifferent to other substances ; the charged conductor of an electric machine is polar, and responds to the class of bodies called electric conductors, being indifferent to all others ; in all these cases, when the elements of this polarity are brought into relation, the specific phenomena are evolved, and the polarity *resolved* for the moment. Very analogous are the phenomena of the nervous system, each department of which, when active, is in a state of polarity, evincing certain definite and specific acts or feelings when exposed to certain influences. The optic nerve is polar with regard to light, but takes no cognizance of any other agent, and so in great measure with the ear, the taste, and the smell. The sense of touch is polar with regard to objects with which it comes in contact, but takes no impression (or only those of the most obscure character) from those influences which are so powerful upon the other senses. This, then, is a true polarity of the nervous system ; and when we consider how analogous the nervous influence is to the electric, in its mode of propagation and in many of its manifestations (muscular contraction, to wit), we cannot be surprised to meet with further analogies in some of the irregularities of polar tension. For instance, an electric jar may be discharged perfectly by the appropriate apparatus, and brought into a state of equilibrium or indifference ; yet very shortly, without any recharge, it will be found to be in a partly charged state, and it requires repeated processes ere it is brought finally into a state of rest. The brain, when active, is in a state of tension or polarity ; when at rest, as in sound sleep, it is in a state of entire indifference ; but in this case we have the organic processes perpetually continued ; and what wonder that the tension of the brain should thereby be often renewed, so as to awake it

to some amount of activity ; hence all the phenomena of dreaming.

But why is the dream acted ?

In the perfectly waking state any emotion of the mind produces generally some corresponding action of the body, though perhaps slight ; in individuals of irritable fibre this is invariable, except it be modified by education. But in a powerfully abstracted state of the mind, when all external influences, except those upon which the mind is employed, are cut off, the body *acts* the thought of the mind with a certainty and precision which frequently enables the bystander to read the train of ideas accurately. In dreaming, where the mind is absorbed utterly in one train of thought, it is but what we might expect, to find the limbs dramatizing the pictures presented to the mind ; hence the state described in our fourth division, true somnambulism.

But again, why in the higher forms of somno-vigil are the senses in such a peculiar condition ?—why so acute with regard to some objects, so dead to others ?

We have seen how, in the abstraction, the mind gradually excludes all impressions, save those connected with one special train of thought ; the student is absorbed in his problem, and hears nothing of the thunder, sees none of the lightning which plays round him,—the most familiar voice or the most unearthly sounds fall alike dead upon his ear. No doubt these sights and sounds produce their proper physical impression upon the organs of sense, but the brain is no longer in a condition to receive them ; it is not in a state of polarity to ordinary influences ; all its tension has been withdrawn from without, and fixed upon one class of ideas ; impressions therefore fall as ineffectively upon it as light might upon the ear, or sound upon the eye. But in sleep and dreaming there is no necessity to withdraw the atten-

tion from one class of ideas to fix it on another ; the tension or polarity of the brain is instituted *only* with reference to that particular class which forms the subject of the dream ; the *senses* may be physically impressed by, but the mind does not recognize, any other object, and hence it is not difficult to understand all the apparently anomalous instances of contradictory perception and unconsciousness ; the individual is *abstracted*, but still more completely, for obvious reasons, than in his waking moments.

That the mind should, in certain aspects, be even more acute and vigorous than when awake, — that tasks should be completed of the most abstruse character, which had baffled the waking energies, — all this, received in the light above suggested, will not appear miraculous ; all distracting thoughts, all extraneous sources of error, are withdrawn ; and the mind, fully awake to this subject, is enabled to devote its concentrated energies to the task.

One mysterious question remains to be asked, What is the nature of the vision which the somnambulist appears to possess ? seeing that frequently the eyes are quite closed ; and even when not so they are unadapted to the ordinary mode of receiving visual impressions. Is there a transference of special sensation ? is some part of the surface endowed with something analogous to visual faculties ? The records of the various forms of hypnotism, vouched for by men of no mean standing or credibility, would appear to favor such a hypothesis ; but, in the present state of our investigation, we feel unprepared to pass a judgment on so vexed a question. On the phenomena of double consciousness we offer no comments, feeling assured that, as yet, our opportunities of observation have been too few and limited to permit of any satisfactory or efficient generalization.

## VIL

### REVERY AND ABSTRACTION.

**PROBLEM : To what extent is ATTENTION entitled to be considered the one great working faculty of the Mind ?**

THE brain \* is the prime minister of the body ; he is chief of the police, president of the legislative, and head of the executive departments. In an ordinary government, this would be a more than sufficient monopoly ; but in our microcosm, other and even more important functions devolve upon the premier. He is the head of the commissariat, manages the home department, and has direct and uncontrolled sway over all our foreign relations. Yet, with all this, he has time for idleness ; and, besides the stated number of hours which he devotes to repose, he occasionally, in working hours, refuses to respond to the claims upon him ; and some of the departments, chiefly that of "foreign affairs," are neglected.

\* If, in the following sketch, the terms Brain and Mind appear to be used convertibly, it must be understood that no material identity is implied; they are so used for convenience merely, inasmuch as we become acquainted with the phenomena of our immaterial mind only as it can be corporeally manifested through the material organ. So, also, if we speak of will, thought, judgment, memory, &c. as acting sometimes together, and sometimes apparently in opposition, it is by no means intended to signify that these are separate elements of what must be considered necessarily as one and indivisible; but only that they are different modes of action of the same essence. In short, no metaphysical theories are involved: the terms used are intended not to be strictly analyzed, but to convey a clear history of certain noteworthy phenomena.

In every ordinary act there are many elements involved ; an impression is received from without, and conveyed to the mind ; it is there perceived, attended to, and compared with other impressions which the memory brings forward ; a judgment is passed upon it, and a course of action determined upon, which, through the medium of the will, is carried into effect ; it includes, therefore, perception, attention, and will, as chief elements. Or, according to laws which we need not now inquire into, an idea is originated within the mind itself ; the energy of the subjective impression, on the one hand, and the force of will on the other, determine the amount of attention to be accorded to it ; and it is either detained for consideration, or for action (if it be of a nature to require action), or allowed to pass away, most probably leaving an associated thought behind it, to be similarly treated.

Thus attention and will are most important elements in all serviceable thought ; and according as these are more or less prominent, practical results will follow the operations of the mind. Sir William Hamilton remarks that "the difference between an ordinary mind and the mind of a Newton consists principally in this, that the one is capable of a more continuous attention than the other,—that a Newton is able without fatigue to connect inference with inference in one long series towards a determinate end ; while the man of inferior capacity is soon obliged to let fall the thread which he had begun to spin." Bacon also places all men of equal *attention* on one level, recognizing nothing as due to genius. Helvetius goes so far as to say that genius is indeed nothing but a continued attention (*une attention suivie*). Buffon also speaks of it as a protracted patience. "In the exact sciences, at least," says Cuvier, "it is the patience of a sound intellect, when invincible, which truly consti-

tutes genius." Lord Chesterfield acknowledges that the power of applying an attention, steady and undissipated, to a single object, is the sure mark of a superior genius.

Whether we give full credence to all this weight of testimony or not, we are bound to recognize in attention an element of paramount importance, as influencing what is generally called the "train of thought"; and as one which, in appearance at least, and in popular estimation, often makes the difference between a wise man and a fool; and we think it useful to investigate briefly some few of the phenomena of thought, considered in this point of view chiefly, as more or less affected by attention. These are worthy of much more scientific analysis than they have hitherto received; and much empirical observation is still needed. When in dreams, where volitional attention is in entire abeyance, we find that we live months or years in a few hours, we are too apt to be content with saying that these are "the stuff that dreams are made of"; perhaps never considering that, whether sleeping or waking, this is a veritable phenomenon, and potentiality of mind,—perhaps more wonderful than our most brilliant waking thoughts. And when we meet with a student so deeply immersed in his problem, or his thought, as to know nothing of the physical influences around,—to be entirely insensible to pain or danger,—we have a strong tendency to *explain* the whole by the theory that he is an "absent man"; perhaps careless of *why* he is absent, and how mind can so influence matter; not clearly recognizing that therein is involved one of the most important questions of our nature.

In natural sleep, as before observed, volitional attention is dormant, whilst memory and imagination are thereby allowed to run riot, and to wander in rapid suc-

cession over the nearest and most distant scenes, and to represent intercourse with the distant living or dead, without arousing any sensations of surprise or incongruity. Under peculiar circumstances, however, the attention may be aroused to certain objects, or classes of objects, around which then all the thoughts cluster, and towards which all the actions tend ; whilst it remains not only indifferent to all other surrounding objects, but is incapable of being attracted to them by any means short of such as will interrupt the special mental condition. Many of the phenomena attendant upon this and allied conditions were investigated in the preceding paper ; \* and it was concluded that they were due to an organic *polarity*, by virtue of which the brain became sensitive to certain impressions in an extraordinary degree, remaining insensible to all others, physical or otherwise ; in the same manner as the charged conductor of an electrical machine responds only to conductors, appearing indifferent to all non-conductors or electrics ; or as a magnetized steel bar is sensitive only to steel, and indifferent to other matters. Perhaps a more apt illustration may be drawn from the horse-shoe bar of soft steel, which becomes a powerful magnet (i. e. polar) on passing an electric current through coils of copper wire around it ; but as soon as the current ceases, the polarity is resolved, and the bar presents only the properties of common steel. It was remarked, also, that during the continuance of this polarity, this species of attention, the sleep of the other faculties became much more profound, and more difficult to interrupt by any influence ; the nervous influence being so concentrated upon the awakened parts of the organism, that the sensitivity of the remainder was destroyed, or much lessened.

The one remarkable circumstance about all the various

\* Vide "Somnambulism."

and complicated actions observed in the higher forms of somnambulism is that they occur during sleep, and indicate a special attention of the faculties only to one class of objects, the insensibility towards others being complete. Now we meet with phenomena during the waking hours, which, considered objectively, are strictly analogous to these, — they have only a different point of departure. Such are the phases of absence of mind, reverie, and abstraction, — all essentially different in nature, yet all presenting the same external aspect ; and so far allied as that they depend respectively upon the degree of attention which the will has brought to bear upon certain pursuits. These, one and all, it would be difficult to distinguish by accurate description from the higher lucidity of somnambulism, — except in so far as the former have originated by a disturbance of balance amongst the faculties during waking moments ; whilst the latter commenced by the polarity itself, organically excited during sleep.

It must be borne in mind that, for the complete appreciation of the external world, three things are essential : (1) Organs of the senses in a normal healthful condition ; (2) a proper distribution of nervous fluid,\* ready to be stimulated by the appropriate objects, as light to the eye, sonorous vibrations to the ear, &c. ; and (3) an exercise (more or less under the influence of the will) of the faculty of attention to the impressions so produced and conveyed. All these are obviously neces-

\* Here, again, we would remark that no theory is implied, or to be understood, by the use of this term "*nervous fluid*." It is used only to express the fitness or adaptedness for appropriate excitement, by any nerve or set of nerves, as thus: the optic nerve is properly supplied with nervous fluid when it responds normally to its own special stimulus of light, &c. But by this we no more hypothesize the actual existence of a fluid proper, than we do when speaking popularly of the electric fluid.

sary ; if the first be absent, the negative result is clear : the second is equally essential ; and it is with the variations of the third element that we are now especially concerned, and with those changes which these variations induce in the distribution of the nervous fluid. We will notice these under three natural divisions, according (1) as the attention cannot be directed to any one train of thought, but wanders off to any other, defying the efforts of the will to restrain it ; (2) as it is voluntarily surrendered up, and the fancy or imagination allowed, or even encouraged, to roam amongst things known or unknown, things in heaven, and things on earth ; and (3) as the attention is firmly fixed on one train of thought, to the exclusion of all others, and to the ignoring of all external influences. All these present the same external aspect ; all are classed popularly under one head, — that of “wool-gathering,” or some analogous expression ; yet, whilst the first form is the characteristic of the feeblest and most inefficient intellects, the second is the great prerogative of poets and artists ; and the third, the highest of all, is generally found in the persons of men of intellect the most exalted, of genius the most transcendent. These forms may be known, for convenience, as Revery, Voluntary Waking Dream, and Abstraction of Mind.

1. Revery is an approach to dreaming or sleep ; the attention to surrounding objects begins to fail ; and, instead of being fixed on what is passing, is wandering over a thousand vague and imperfectly connected ideas. It is common, as Dr. Mason Good remarks, “at schools and at church ; over tasks and sermons ; and there are few readers who have not frequently been sensible of it in one degree or other.” Who has not often read page after page of a book, of which either the matter has been uninteresting or the style repulsive, and suddenly discov-

ered that the reading has conveyed no ideas to the mind? Who has not often in succession taken out his watch to see the time, and put it back without acquiring the knowledge, though he has gazed most wistfully at the hands? We may talk to a person in this state, and his ears will gather in the sound; but the mind does not interpret it into ideas; he may be obscurely conscious of our presence, but we serve only as a starting-point for some weak chain of associations, which end — probably nowhere. He listens to a grave discourse with an apparent attention most profound and edifying; and, at the most affecting part, his train of thought has led him possibly to some ludicrous association, and he breaks into uncontrollable laughter.

All men are, at some time or other, more or less experienced in this state; it almost invariably precedes gradual sleep; often occurs for a short time before awaking. At other times it is productive of results amusing enough; but it must be remembered that those minds of which this has become the habitual and incurable condition are in the most pitiable state of unfitness for all those high purposes of knowledge and reflection for which our marvellous powers were bestowed upon us. Things the most important and the most sacred equally fail to fix his attention; and, in a more than usually significant sense, trifles make up the sum of his existence.

An extreme case of Revery is related by Sir A. Crichton, concerning a young man of good family, and originally sound intelligence, in whom errors and defects of education had induced an almost unconquerable and constant absence of mind. He would sit for the whole day without speaking, yet without any signs of melancholy; for the play of his countenance, and his occasional laughter, showed that a multiplicity of thoughts were passing through his mind. He would sometimes

begin to speak, but break off half-way, having completely forgotten what he wished to say ; yet when thoroughly aroused, he manifested no intellectual feebleness ; and could judge correctly on any matter to which he could be induced really to attend. Most probably, in this case, an original defect aided the faulty mode of education. This extreme form of inattention, or rather inability to attend, may occur temporarily as a morbid condition, as in the well-known case of Mr. Spalding, who, in attempting to write a receipt, could not by any possibility form the correct words ; and finally, after long and arduous effort, discovered that he had written "fifty dollars, through the salvation of Bra—." This is generally, as in the instance related, the result of overstrained attention ; the faculty is exhausted, and will work no more.

2. Voluntary waking dreams result essentially from the voluntary surrender of the influence of the will and attention ; the imaginative faculties being allowed undisturbed play. Macnish observes that "young men of vivid sanguine temperament have dreams of this kind almost every morning and night. Instead of submitting to the sceptre of sleep, they amuse themselves by creating a thousand visionary scenes. Though broad awake, their judgment does not exercise the slightest sway, and fancy is allowed to become lord of the ascendant. Poets are notoriously castle-builders ; and poems are, in fact, nothing but waking dreams. . . . Milton's mind, during the composition of 'Paradise Lost,' must have existed chiefly in the state of a sublime waking dream. . . . By another law, to which we have not alluded, the emotions are more excited in proportion as attention, will, and judgment are dormant ; and thus we attain to the vivid coloring of the poet's dream, and the artist's ideal. There is a strong tendency in this form to become mor-

bid, and as uncontrollable as that first noticed; then, from one of the noblest gifts of human nature, it becomes one of its most formidable scourges. Closely allied to this form of day-dreaming, though in one respect different from it, is the Reverie which is characteristic of several forms of religious mysticism. By withdrawing the attention continuously from all objects of sense, the spirit is supposed to become purified, and united with the Deity; and the mystic is favored with celestial visions. All this is accomplished by directing the sole attention to some object as uninteresting as the point of the nose, at which the Fakirs squint horribly, "until the blessing of a new light beams upon them." "The monks of Mount Athos," says Dr. Moore, "were accustomed, in a manner equally ridiculous, and with the same success, to hold converse, as they fancied, with the Deity. Alla-tius thus describes the directions for securing the celestial joys of Omphalopsychian contemplation: 'Press thy beard upon thy breast, turn thine eyes and thoughts upon the middle of thine abdomen; persevere for days and nights, and thou shalt know uninterrupted joys, when thy spirit shall have found out thy heart, and illuminated itself.' Similar is the practice of the Yogis, as quoted by Mr. Vaughan.\* "He planteth his own seat firmly on a spot that is undefiled, neither too high nor too low, and sitteth upon the sacred grass which is called Koos, covered with a skin and a cloth. There he whose business is the restraining of his passions should sit, with his mind fixed on one object alone; in the exercise of his devotion for the purification of his soul, keeping his head, his neck, and body steady, without motion; his eyes fixed on the point of his nose, looking at no other place around." By this interesting and en-

\* "Hours with the Mystics," Vol. I. p. 63.

livening process, the soul is supposed to be "reunited to the Supreme."

All fixed attention intensifies sensation ; attention to bodily sensation produces a form of hypochondria ; attention to scientific investigation is rewarded by clearer and more accurate appreciation of its truths ; but above all, constant attention to the emotions has an overwhelming tendency to heighten them to an incredible and morbid extent. Hence arise many of the strange psychopathies of the present day ; and hence we can readily imagine the constant waiting and watching for visions in these mystics, to be attended with the required result, in accordance with the simplest laws of mind. But we pass briefly over this, that we may be enabled to devote a little more space to the third and most important form of absence of mind.

3. Neither in reverie nor day-dreaming is there determined what we have termed a true polarity, i. e. a concentration of nervous force upon one point, attended by a corresponding diminution in all the others. There is certainly observed this diminution, but without concentration ; the place of this last being usurped by an exhaustion of the nervous energy upon a multitude of ideas. But in abstraction, the complete and typical form of absence of mind, this polarity is developed. By earnest attention to one point, or line of thought, the whole energy of the mind becomes absorbed in and expended upon this ; and although the senses remain intact, the nervous fluid receives no stimulation from them, and the mind attends to no impressions but such as are connected with the chain of ideas,—as are within the sphere of polarity. Then ensues the whole train of phenomena, the odd mistakes, the singular misinterpretations of external objects, the indifference to outer sights and sounds, and the insensibility to inconvenience,

or even acute pain, which gain for their possessor the character of eccentricity at least. This, the extreme development of the most valuable faculty of the mind, and that without which all the others, however brilliant, are worthless, is the direct agent in bringing its possessor into the most absurd and troublesome dilemmas ; and continually suggests the close association between great wit and madness. The most characteristic illustrations are found amongst names which have made the world's mental history. Archimedes was at the taking of Syracuse so absorbed in a geometrical problem, that he merely exclaimed to the soldier who was about to kill him, *Noli turbare circulos meos*. Newton's absence of mind is well known : he frequently forgot to dine, and it is said he on one occasion used a lady's finger as a tobacco-stopper. It is said that Joseph Scaliger was so engrossed in the study of Homer during the massacre of St. Bartholomew, that he was only aware of his own escape from it on the next day. Carneades had to be fed by his maid-servant, to prevent him from starving. Cardan was wont on a journey to forget both his way and his object, and could not be roused from his thought to answer any questions. Alcibiades relates of Socrates that he once stood a whole day and night, until the breaking of the second morning, with a fixed gaze, engrossed with the consideration of a weighty subject ; "and thus," he continues, "Socrates is ever wont to do when his mind is occupied with inquiries in which there are difficulties to be overcome. He then never interrupts his meditation, and forgets to eat and drink and sleep,— everything, in short, until his inquiry has reached its termination, or, at least until he has seen some light in it." The mathematician Vieta was sometimes so absorbed in meditation, "that he seemed for hours more like a dead person than a living, and was then wholly

unconscious of everything going on around him."\* The great Budæus forgot his wedding-day, and was found deep in his Commentary when sought up by the party.

The forgetfulness of time is a very common event during abstraction ; of this the instance already given of Socrates is almost equalled by that of a modern astronomer (quoted by Dr. Moore), who passed the entire night observing some celestial phenomenon ; and being accosted by some of his family in the morning, he said : "It must be thus ; I will go to bed before it is late."

Perhaps the insensibility to pain is the most remarkable of all the phenomena connected with abstraction. Pinel relates of a priest that, in a fit of mental absence, he was unconscious of the pain of burning ; the same is stated of the Italian poet Marini. Cardan relates something analogous concerning himself. Cases like these might well leave some doubt in the mind as to their authenticity, had we not analogous facts sufficiently illustrative of their possibility. Thus in Mr. Braid's hypnotic (or sleep-producing) process, which consists only in fixing the sight and the attention on one point for some time, a deep sleep is induced, during which much pain may be inflicted without producing any signs of suffering. In this case, as in that of extreme abstraction, the attention so directs the nervous fluid, energy, excitability, or whatever we please to call it, in one direction, that it responds to no other stimulus, until the polarity is naturally resolved or forcibly broken.

The absent man is looked upon with a very different degree and kind of appreciation by the man of the world, the poet, and the philosopher ; whilst the former only sees in abstraction a subject for burlesque and ridicule, the latter recognizes in it a great and important faculty, mysterious, and worthy of investigation ; and the poet

\* Sir William Hamilton.

revels and glories in the gift as something divine. Budgell, in the *Spectator* (No. 77), represents Will Honeycomb as throwing away his watch instead of a pebble into the Thames. "While you may imagine he is reading the *Paris Gazette*, it is far from being impossible that he is pulling down and rebuilding the front of his country house." Bruyère in his "Characters" gives a graphic but somewhat coarse sketch of a similar character, in which he is supposed to swallow the dice and throw his glass of wine on the table; and many other equally absurd acts, wherein nothing is seen but the ridiculous aspect of the mental condition. How different is the same phase of mind described by Cowper, in lines which contain so many of the noteworthy points of reverie that we quote them entire:—

" Laugh ye, who boast your more mercurial powers,  
 That never fed a stupor, know no pause,  
 Nor need one; I am conscious, and confess,  
 Fearless, a soul that does not always think.  
 Me, oft has fancy, ludicrous and wild,  
 Soothed with a waking dream of houses, towers,  
 Trees, churches, and strange visages expressed  
 In the red cinders, while with poring eye  
 I gazed, myself creating what I saw.  
 'T is thus the understanding takes repose  
 In indolent vacuity of thought,  
 And sleeps, and is refreshed. Meanwhile the face  
 Conceals the mood lethargic with a mask  
 Of deep deliberation, as the man  
 Were tasked to his full strength, absorbed and lost."

But Sir Walter Scott, great wizard equally in prose or verse, gives by far the most lifelike and attractive representation of the abstracted man; with just that slight artistic *suspicion* of caricature, for want of which a photographic portrait always fails to convey a perfect idea of the original. What can be more admirable than the picture of the *distract* Dominie Sampson, with his ungainly figure, his childlike simplicity, his pro-di-gi-ous

er-u-di-tion, as he would call it, his tender affectionate heart, and his endless uncouth *gaucheries*? Who that has once seen him can ever forget him ; or, remembering, fail to love him ?

But it is in the person of Mr. Cargill, in "St. Ronan's Well," that we meet with a sketch the most accurate and philosophically true that we have ever seen of mental abstraction. From the original cause, to the most minute details in the results, all is correct ; the utter absorption in one train of ideas, the insensibility to all others, the imperfect awakening to practical life when the familiar sounds of "distress" and "charity" partly arouse the old instincts, even as the sound of a man's own name will sometimes break the chain of ideas, when a pistol fired at the ear would fail to do so ; the dream-like absence of surprise at anything which chimes in with the current idea, however strange the source, the incapacity to be recalled completely, except through the emotions ; all are admirably represented. We are tempted to quote one scene : Mr. Touchwood, a rich, testy old gentleman, finds himself in a country place in want of company, and resolves to call on the minister. After much difficulty in obtaining admission, he gets into the student's room, but, when there, appears to be as far from his real purpose as ever ; for no noise that he can make will attract his attention. At last he speaks to him, explaining that he is in "distress for want of society," and begs him, "in Christian charity," to give him a little of his company. Mr. Cargill only heard "distress" and "charity," and "gazing upon him with lack-lustre eye," quietly thrust a shilling into his hand. To this Mr. Touchwood demurs, and by degrees so far arouses Mr. Cargill's attention that he believes he has the pleasure "to see his worthy friend, Mr. Lavender." When this hypothesis fails equally with the other, he begs permission for a moment to "recover

a train of thought, — to finish a calculation ” ; and then relapses into total disregard of his visitor. At length, just as Mr. Touchwood began to think the scene as tedious as it was singular, the abstracted student raised his head, and spoke as if in soliloquy : “ From Aeon, Accor, or St. John d’Acre, to Jerusalem, how far ? ” “ Twenty-three miles, N.N.W.,” answered his visitor, without hesitation.

Mr. Cargill expressed no more surprise at a question which he had put to himself being answered by the voice of another than if he had found the distance on the map. It was the tenor of the answer alone which he attended to in his reply. “ Twenty-three miles ! Ingulphus, and Jeffrey Winesauf, do not agree in this ! ”

Mr. Touchwood’s reply is a private communiation of these respectable authorities, which arouses the pastor’s instincts, though it fails to completely awake him. “ You might have contradicted their authority, sir, without using such an expression.” Drawn out at length into rational colloquy, and under the promise of much information on the subject of the geography of Palestine, Mr. Cargill accepts an invitation to dine with his visitor ; he, of course, forgets it immediately, and on being sought up by Mr. Touchwood at dinner-time, he commences an apology for having forgotten to order the dinner, and proposes milk and bannocks. On the true state of the case being explained, he becomes rather triumphant as to his memory. “ I *knew* there was a dinner engagement betwixt us, and that is the main point.” He wishes to set off in his old dusty ragged dressing-gown, and remarks in passing, “ What strange slaves we make ourselves to these bodies of ours ; the clothing and the sustaining of them cost us much thought and leisure, which might be better employed in catering for the wants of our immortal spirits ! ” a

reproach to which he of all men would seem least obnoxious.

We have had occasion more than once to allude, in the course of these observations, to the obliviousness of time in revery. Sometimes we are unconscious that more than a few moments have passed, after many hours of thought : this is the case in abstraction proper. At other times, as in true revery, we seem to pass over immense periods of time in a few seconds. A phenomenon strictly analogous to this is observed in dreams, where, as all are conscious, scenes are enacted occupying weeks or months, or years, in as many moments. Mahomet (*ipso teste*) was conveyed by the angel Gabriel through the seven heavens, paradise, and hell, and held 59,000 conferences with God, and was brought back to his bed before the water had finished flowing from a pitcher which he upset as he departed. There is another marvellous story related in the Turkish Tales, founded upon this ; where to convince one of the sultans of the possibility of this adventure of Mahomet's he himself is sent off in a vision upon a journey which lasts for years, during the instant which elapses between plunging his head into a vessel of water and drawing it out. But these fictions are not necessary to convince any one who has ever dreamed, how much incident, thought, and emotion may be crowded into an almost immeasurably short moment of time. Hence we might conclude that our only personal measure of time consists in the observation of successive acts of attention ; and when this is dormant, time for us may be said not to exist. But we would venture to suggest that in these cases, both in active revery and dreaming, there is not so much a succession of ideas as a simultaneous picture presented, which the mind interprets by a law of its own into the past and the passing, even as the eye interprets the dis-

tance of the various parts of a perspective, according to the degrees of light and shade therein involved. In a landscape, the most uneducated eye will pronounce the red coat or cloak, or the prominent feature, whatever that may be, to be near at hand ; and the dim dusky mountain in the background to be miles away. The ear is subject to similar illusions, and it would not be difficult to prove that the mind itself is subject to the laws of perspective, and *interprets occasionally faint impressions into the fading traces of past experiences.* That the mind has an arbitrary system of interpretation must be immediately obvious, for to take only one illustration, what can possibly be more dissimilar than the vibrations conveyed through the medium of the auditory nerve to the mind, and the concert of sweet sounds into which the mind interprets them ? The same theory, if admitted, will serve fully to elucidate a curious mental phenomenon, which has often been described, but never satisfactorily explained ; we refer to that feeling which many experience occasionally, of having witnessed, or taken part in, the passing scene of the moment, at some previous time ; as though we had even heard all that is passing before, and could almost predict the next act or word ; or, as a friend graphically describes it, "as though the play were now being performed which we had previously seen rehearsed." The explanation which we would suggest is this. Whatever may be the truth as to the duality of the *mind*, there can be no doubt whatever that its organ, the brain, is dual and symmetrical, and constantly receives double impressions or images. Under ordinary circumstances of innervation, these impressions strictly coincide, and convey but one idea to the mind ; as the images on the two retinæ convey but one object to the mind, so long as the axes of the eye coincide. But under circumstances of exhaus-

tion, or other influences producing irregular innervation, the one half of the brain receives a perfect, and the other a dim and imperfect, impression of what is going forward ; and this dim and indistinct phantasm, occurring side by side with the correct image, is interpreted involuntarily by the mind into the semblance of a memory, a fading impress of a long past event.

But this is a digression ; and we have now but space briefly to sum up the practical conclusions from these considerations on Revery. We have seen reason to believe that Attention, under the power and command of the will, is the most important of our faculties ; inasmuch as without this all the others are absolutely or comparatively valueless. We have seen the pitiable condition to which the mind is reduced when this faculty is no longer controllable by the will ; and also how completely, if over-exerted, it runs away with the entire consciousness ; and makes the subject of it a mere thinking-machine, and one, moreover, which can only think in one direction. It only remains to inquire how, and under what conditions, these variations of attention occur and originate.

There appears sometimes to be an *original defect* of the faculty ; should this be the case, vain will be all efforts directed to its cure ; let this be well understood. Much more frequently, however, a want of the faculty of attention is induced by some of our ingenious devices for the "artificial production of stupidity." Perhaps the faculty is neglected altogether, and, for want of exercise, dies. Perhaps the young mind is compelled to devote exclusive attention to subjects thoroughly distasteful and useless, and for which it has no aptitude ; nothing encourages wandering of mind more than this. Perhaps, again, the subjects of study are proper enough, but too numerous for the powers ; and the faculty of

attention is thus distracted, frittered away, and lost. Again, the faculty may have been acquired and fully developed, but may decay from indolence, from disease, from luxury, and from all debilitating influences. The prophylaxis and remedy against all this is too obvious to dwell upon.

Abstraction proper is most frequently due, as to its origin, we believe, to some want of balance in the human interests of the life in question ; probably some lack of outlet for the emotional part of our nature has thrown its possessor upon his intellect as a relief ; and upon one branch of study for an all-absorbing interest. There may, however, be an original tendency as in the last case ; and it may also occur from voluntary cultivation, or from the impression produced by some scientific or philosophic discovery.

Whatever may be the sources and origin of absence of mind, it cannot be too strongly urged that it is necessary to guard sternly and strictly against its progress, and to use those means which will in the one case promote attention, and, in the other, modify its intensity. For diverse as are the forms which we have described, they have a strong tendency, one and all, to terminate in literal and emphatic "*absence of mind*," i. e. in annihilation of the power of thought.

## N O T E S .

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### NATURAL HERITAGE.

#### WORKS REFERRED TO IN THIS ESSAY.

1. *Traité philosophique et physiologique de l'Hérédité naturelle, dans les États de Santé et de Maladie du Système nerveux.* Par M. Prosper Lucas. Paris.
  2. *Essay on Hereditary Diseases, and on Hereditary Tendency to Depravity and Crimes.* By Julius Henry Steinau, M. D. Berlin.
  3. *Institutiones Physiologicae.* By I. F. Blumenbach.
  4. *Lectures on Physiology, Zoölogy, and the Natural History of Man.* By Sir Wm. Lawrence.
  5. *The Use of the Body in Relation to the Mind.* By George Moore, M. D.
  6. *On Intermarriage.* By Alexander Walker.
  7. *Researches into the Physical History of Mankind.* By J. C. Prichard, M. D., F. R. S.
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NOTE 1, p. 10.

“Medicine in Modern Times.” Discourse by Dr. Gull on Clinical Observation, p. 187.

NOTE 2, p. 13.

Sinibaldi’s “Geneanthropeia,” Lib. VIII.

NOTE 3, p. 18.

“De Civitate Dei,” Lib. V. caps. 2 and 7.

NOTE 4, p. 19.

"*Considérations sur les Corps organisés*," Tome II. chap. 7.

NOTE 5, p. 21.

"*Anatomy of Melancholy*."

NOTE 6, p. 28.

"*On Hereditary Diseases*."

NOTE 7, p. 35.

That is, where idiocy is not *complete*, in which case there is no continuance of the race. The complete idiot is the *last term* of degeneration.

NOTE 8, p. 38.

"*History of European Morals*," Vol. I. p. 62.

NOTE 9, p. 39.

"*Essay on William Pitt*."

NOTE 10, p. 41.

For obvious reasons, I do not dwell on this subject. For illustrations, the reader may consult Fodéré, "Sur la Folie."

NOTE 11, p. 49.

I subjoin some illustrations given by M. Lucas, without, however, guaranteeing their authenticity.

Quoted from Sigaud de Lafond, "Dict. des Merveilles de la Nature," Tome II. p. 162 : "The wife of one of the coachmen of Charles X. became to the surprise of herself, her husband, and her children, who were thirty or forty years old, *enceinte* at sixty-five years of age. Her pregnancy followed the usual course, but the child presented all the marks of the senility of the parents.

"Marguerite Cribsonna, who died in 1763, aged one hundred and eight years, was married for the third time when aged ninety-four, to a man aged one hundred and five. From this union were born three children, who were living at the death of their mother; but they had gray hair and no teeth; they lived only upon bread and vegetables. They were sufficiently tall for their age, but had the stoop, the withered complexion, and all the other signs of decrepitude."

"*Fili ex senibus nati, raro sunt firmi temperamenti.*"—  
SCOLTZIUS.

## NOTE 12, p. 56.

"Physiology and Pathology of Mind," 2d edit. p. 243. London, 1868.

## NOTE 13, p. 58.

"Traité des Dégénérescences," p. 62.

## NOTE 14, p. 61.

Perhaps I ought not to style the Chinese actually *barbarous*; but certainly such civilization as they possess, refined as it may be in some respects, does not contain within itself the elements of development and progress. M. Biot gives some interesting accounts of their manners and customs; from which it appears that these have been absolutely the same for a thousand years. See his "Mélanges Scientifiques et Littéraires."

## NOTE 15, p. 63.

The "racer" may also be considered degenerate in all respects save that of speed; — bred for a speciality, he is good for nothing else. Probably there are more "weeds" — showy, worthless animals — produced from the pure racing breed than from any other.

## NOTE 16, p. 65.

I give these views as those generally entertained by good authorities; but my own opinion, as I have stated in an earlier part of the essay, is not in accordance with them.

## NOTE 17, p. 65.

See, on this subject, M. Devay's Treatise, "Du Danger des Mariages consanguins."

## NOTE 18, p. 67.

"Anatomy of Melancholy."

## NOTE 19, p. 71.

On some means of counteracting the various evils here referred to, I quote the following passage from Dr. Mayer's work, "Des Rapports conjugaux" (Paris, 1868) : —

"La meilleure manière de corriger les dispositions morbides héréditaires, telles que la phthisie, la goutte, le cancer, les scrofules, &c., c'est le croisement des races et des tempéraments afin qu'il s'établisse une sorte de compensation entre les qualités négatives de l'un des organismes et l'excès en sens contraire de l'autre, d'où résulte,

en dernière analyse, une pondération profitable à la constitution de la progéniture.

"Consulter à ce sujet son médecin ; ne pas craindre d'entendre la vérité sortir de sa bouche ; l'encourager même à s'expliquer catégoriquement ; tel est le devoir des pères et mères. C'est un acte d'humanité que chaque famille doit remplir. Le médecin, de son côté, par l'importance de son ministère, doit agir avec toute la sincérité de sa conscience, et se placer comme juge impartial entre les familles, pour rejeter les alliances dont les suites ne pourraient qu'être funestes à l'un ou à l'autre des époux, ou aux deux à la fois."

NOTE 20, p. 81.

"*Traité des Dégénérescences,*" p. 568.

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## DEGENERATIONS IN MAN.

### WORKS REFERRED TO IN THIS ESSAY.

1. *Traité des Dégénérescences physiques, intellectuelles et morales de l'Espèce humaine ; et des Causes qui produisent ces Variétés maladiques.* Par le Docteur B. A. Morel.
  2. *De France en Chine.* Par Dr. Yvan.
  3. *Rapports sur les Marais salants.* Par M. Melier.
  4. *Ueber die endemischen Krankheiten Schwedens.* By Dr. Magnus Huss.
  5. *Physiology and Pathology of Mind.* By Dr. Maudsley.
  6. *The Chinese Empire.* By the Abbé Huc.
  7. *Études sur la Vie anglaise.* Par Léon Faucher.
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NOTE 1, p. 90.

In thus broadly asserting man's original purity, and *his creation*, I am aware that I manifest a striking ignorance or disregard of the received philosophy of the day. "Creation" has, in the minds of many, given place to "Development"; and the Creator to an impersonal law, or a selective chance. As a natural conse-

quence, the *original purity* of man is only such purity as could be derived from his immediate parent, the ape. Tending to this end, I have seen much bold assertion and crude generalization, but, so far as I can observe, no vestige of proof has been offered. This may be forthcoming in the future; — *en attendant*, I prefer the ancient belief which, although much despised, presents to my mind greatly fewer difficulties, even in a scientific aspect, than the new doctrines. As will be seen from the text, the question is not urgent for the purposes in view.

## NOTE 2, p. 95.

“*Traité des Dégénérescences physiques, intellectuelles et morales de l’Espèce humaine; et des Causes qui produisent ces Variétés maladiives.*” Par le Docteur B. A. Morel. To this valuable work I am much indebted in the course of the essay.

## NOTE 3, p. 97.

M. Morel, op. cit.

## NOTE 4, p. 110.

Dr. Magnus Huss, “*Ueber die endemischen Krankheiten.*”

## NOTE 5, p. 113.

“*The Physiology and Pathology of Mind.*” By Henry Maudsley, M. D. Second edition, 1868; p. 253.

## NOTE 6, p. 113.

Add to this the pregnant remark by Toussenel in “*Le Monde des Oiseaux,*” p. 106: “On sait que les enfants se ressentent généralement de l’influence passionnelle qui a présidé à leur conception. La plupart des idiots sont des enfants procréés dans l’ivresse bacchique!”

## NOTE 7, p. 117.

“The question for determination is not, What are the effects of opium used to excess? but, What are its moral and physical effects on the constitution of the mass of the individuals who use it habitually, and in *moderation*, either as a stimulant to sustain the frame under fatigue, or as a restorative and sedative after labor, bodily or mental? Having passed three years in China, I may be allowed to state the results of my observation, and I can affirm thus far, that the effects of the abuse of the drug do not come very frequently under observation; and that when cases do occur, the

habit is found very often to have been induced by the presence of some painful chronic disorder, to escape from the sufferings of which the patient has fled to this resource. That this is not always the case, however, I am perfectly ready to admit; and there are, doubtless, many who indulge in the habit to a pernicious extent, led by the same morbid impulses which induce men to become drunkards in even the most civilized countries. But these cases do not, at all events, come before the public eye. It requires no laborious research in civilized England to discover evidences of the pernicious effects of the abuse of alcoholic liquors, — our open and thronged gin-palaces, and our streets, afford abundant testimony on the subject, — but in China, this open evidence, at least, of the evil effects of opium, is wanting. As regards the effects of the habitual use of the drug on the *mass* of the people, I must affirm, that no injurious results are visible. The people generally are a well-formed and muscular race; the laboring portion being capable of great and prolonged exertion, under a fierce sun, in an unhealthy climate. Their disposition is cheerful and peaceable, and quarrels and brawls are rarely heard, even among the lower orders; whilst in general intelligence they rank deservedly high amongst Orientals. Proofs are still wanting to show that the moderate use of opium produces more pernicious effects upon the constitution than does the moderate use of spirituous liquors; whilst, at the same time, it is certain that the consequences of the abuse of the former are less appalling in their effect upon the victim, and less disastrous to society at large, than are the consequences of the abuse of the latter. Compare the furious madman, the subject of delirium tremens, with the prostrate debauchee, the victim of opium; the violent drunkard with the dreaming sensualist intoxicated with opium: the latter is at least harmless to all except his wretched self, whilst the former is but too frequently a dangerous nuisance, and an openly bad example to the community at large."

## NOTE 8, p. 122.

Dr. Pidduck, "On the Effects of Tobacco, as seen at the Dispensary in St. Giles's."

## NOTE 9, p. 123.

"*Histoire médicale des Marais.*" Par Montfalcon.

## NOTE 10, p. 125.

"*Études sur la Vie anglaise.*" Par Léon Faucher. The passages here quoted are taken literally from the report alluded to.

## NOTE 11, p. 128.

Attributable to the same cause, the disease of rye, is the terrible affection known in France for many centuries as the *mal des ardents*, the *peste noir*, the *feu de St. Antoine*, or more recently, recognizing its source, *gangrenous ergotism*. The unfortunate victims of this malady suffered most intolerably. The grinding of the teeth, the contortions of the whole body, the terrible cries, indicated the most inexpressible agony. They complained of a fire under the skin, which consumed the muscles, and separated them from the bones ; yet the surface was cold, and it was difficult to communicate any warmth. Later, the parts affected appeared like charcoal, and the air was poisoned by the smell of the putrid flesh separating from the bones ; the arms and legs came off completely from the trunk, the same affection seized the internal organs, and they perished in extreme agony. In some cases, the malady stopped short of gangrene, but this was a rare exception, and fever succeeded. In some cases there were cramps and convulsions.

## NOTE 12, p. 133.

"For restricted societies, — such as the indigenous tribes which yet inhabit America, and for more numerous societies which have scarcely as yet passed their infancy, — the contact of civilization is a fatal thing, when, in place of the moral law which it should diffuse, this civilization only brings the means of gratifying their grossest appetites, as well as evil tendencies, — the result of a complete lack of instruction, — acquired or transmitted. The extinction of the race then acts in a manner by so much the more rapid, as the uniform mode of existence in these small societies has never developed any element of antagonism to the degenerative influences ; and as the temperament of the individuals has not had the opportunity of gradually adapting itself to any of these disorganizing agencies. . . . But if the contact of Europeans has been pernicious to these races, when the sole elements of civilization have been the interests of commerce and the introduction of vicious habits, it is certain that these in their turn have felt the evil influence of the contact of the Orientals, only borrowing from them their effeminacy and luxury. The influence of climate alone does not explain sufficiently the modifications which the European races have undergone when transplanted to the Indies, to Africa, and to Asia. It is necessary to examine these changes in the new conditions brought about by conquest, by colonization, by immorality ; in short, by all which I have included under the head of *mixed causes of degeneration*." — MOREL, *op. cit.*, chap. iv.

## NOTE 13, p. 134.

I give the subjoined quotation from an author from whom I have frequently borrowed in these pages, not as illustrating *my own* opinion upon these matters, but as being *an* opinion from a source worthy of consideration in some respects :—

" If it be true that all people should be subject to the same moral law, in the same form, and to the same civilization, then it is sure that certain races must disappear from the earth. Many of them possess aptitudes solely compatible with certain social phases, — a new order of things must induce their annihilation. Species of animals, created for a special medium, have disappeared in proportion as the atmospheric conditions of our planet have changed. The social phases through which humanity passes are for man what the revolutions of the globe have been for those creatures whose remains we find in the stratified crust of the earth. Barbarous or savage populations perish in the atmosphere of civilization, as the anaplotherium and the ichthyosaurus have perished when the medium changed." — DR. YVAN, "*De France en Chine*," p. 34.

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## MORAL AND CRIMINAL EPIDEMICS.

## NOTE 1, p. 143.

*English Churchman*, February 28, 1856.

## NOTE 2, p. 144.

*Christian Times*, January 25, 1856.

## NOTE 3, p. 151.

For some interesting notes on this point, consult Trench's "Lectures on Words." Amongst others, he says :—

" This is a notable example of the manner in which moral contagion, spreading from heart and manners, invades the popular language in the use, or rather misuse, of the word ' religion.' In these times, ' a religious person ' did not mean one who felt and allowed the bonds that bound him to God and his fellows, but one who had taken peculiar vows upon him. A ' religious house ' did not mean in the Church of Rome a Christian household ordered in the fear of God, but a house in which persons were gathered together accord-

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ing to the rule of some man. What an awful light does this one word, so used, throw upon the entire state of mind and habits of thought in those ages!"

## NOTE 4, p. 152.

See Mosheim's "Ecclesiastical History."

## NOTE 5, p. 165.

For an account of the causes of this state of literature in England, see Macaulay's "History of England," Vol. I. p. 399 *et seq.* The corresponding condition in France is alluded to in Alison's "History of Europe from 1815 to 1852," Vol. V. p. 274.

## NOTE 6, p. 177.

From the *Medical Times*.

## NOTE 7, p. 180.

From the *Medical Times*.

## NOTE 8, p. 181.

For many of the succeeding details we are much indebted to Mr. Charles Mackay's account of "The Slow Poisoners," in his "Memoirs of Extraordinary Popular Delusions," Vol. II.

## NOTE 9, p. 187.

See *Medical Gazette*.

## NOTE 10, p. 189.

Alison's "History of Europe," Vol. V.

## NOTE 11, p. 195.

See *English Churchman*, February, 1856.

## NOTE 12, p. 197.

A singular instance of scientific special pleading once came under our own notice. A case of poisoning by arsenic was under investigation; the poison was found in the stomach in a large quantity, but the chemist employed *for the defence* asked the writer of this paper if he had ever heard of the fumes of arsenic which had been used amongst the whitewash for the wall acting as a poison, as he intended to found the defence upon the opinion that the deceased did not die from what had been taken into the stomach, but from that used upon the wall!!

## BODY v. MIND.

## NOTE 1, p. 201.

A contemporary writer makes the following remarks illustrative of this subject: "We do a certain Greek word the honor to translate it *soul*; but it is in fact equally applicable to the vegetative life of a cabbage, to the animal life of a sheep, and to the spiritual life of an apostle. An ordinary Greek thought his body just as much of the essence of his humanity as his spirit, and bodily just as important as spiritual perfection. If St. Paul's thorn in the flesh was a visible deformity, a Greek educator would have thought it better for him to be put to death as soon as he was born than to live a burden and a disgrace to his community and to himself. Plato himself would have regarded it as an abuse of the art of medicine to cherish the flickering flame of life in a Pascal or a William III. Epictetus summed up all that was most startling and paradoxical to a Pagan ear when he said, in his own lines on himself, 'I was a slave, a *cripple*, a beggar,— and a favorite of the gods.' " — *Saturday Review*, November 7, 1857.

## NOTE 2, p. 210.

A writer in the *Saturday Review* has alluded to the second proposition in terms with which we cannot but agree: —

" We are glad that so distinguished an educator as Dr. Kennedy has said a word to allay any undue apprehension that may have been excited as to the neglect of physical development at schools. One would suppose people had never seen the playing-fields of Eton, Harrow, Winchester, or Rugby alive with cricket or football, or the Thames at Windsor on a summer's evening. Those who think that boys at an English public school do not feel respect for distinction in games, as well as distinction in Greek and Latin, or that the masters of English public schools do not encourage this feeling, must be ignorant of English school-boy life. Go to a cricket-match at any of the public schools, and look round the ground. You will soon see whether the masters stand aloof from the amusements of the boys,— whether to them the physical excellence of their pupils is a matter of indifference or aversion,— and whether they grudge every moment which is given to the invigoration of the body and taken from the overstraining of the mind. Some boys there are,— as there are some men,— who, in spite of

all encouragement, and even goading, will not take much part in the sports of their fellows. Sometimes this arises from extreme physical weakness, which may be outgrown in time, but which cannot be cured by force. Sometimes it arises from temperament. Generally it is an unhappy temperament, but occasionally — as in the instance cited by Mr. Gladstone and now before our eyes — it is that temperament of deep thoughtfulness which seems the one indispensable condition of all kinds of greatness. Saving these exceptions, — which no system will reduce to uniformity, any more than it will make the color of all boys' hair the same, — we should say the education of English boys at good schools always includes a fair amount of bodily exercise, and that the masters desire and take care that it should be so. Indeed, if we had to name that which in modern times most corresponds to the ancient Greek system of bodily and mental training, we should name the classics and cricket of an English public school."

NOTE 3, p. 212.

"Physiology," Vol. II. p. 817.

NOTE 4, p. 213.

Dr. Carpenter, "Human Physiology."

NOTE 5, p. 213.

"Physiology and Pathology of Mind."

NOTE 6, p. 213.

"On the Physical Basis of Life." — *Fortnightly Review*, for February, 1869.

NOTE 7, p. 216.

Müller, op. cit.

NOTE 8, p. 221.

"When the mind has been long and actively engaged, — if we may use the term, overwrought, — a great dislike, which is sometimes permanent and invincible, may be observed to mental labor of the same nature. We were at a large and celebrated classical school, along with several boys distinguished for application, and ranking high in the estimation of an eminent master, by whom they were tasked to the utmost; yet none of them have, to my knowledge, made any figure in life either as scholars or men of business. In the medical profession, we have known students who signally exerted themselves while they were making ready to be ex-

amined for a medical degree, but, so far from evincing continued pleasure in scientific pursuits, they have since degenerated into mere traders. In a justly celebrated University, in which the examination for a Fellowship requires a length and closeness of application which is sufficient to impair the power of most minds, it has been observed that many of the Fellows after their election have lost all their original relish for learning, and have become men of little performance, although originally of great promise." — DR. CHEYNE,  
*On Partial Derangement of the Mind.*

## NOTE 9, p. 222.

We quote the following passage from the *Scarificator*: "There is that which destroys more fatally than continued physical exertion. The tendency that over brain-work has to destroy the intellect has been long observed. Southey died in darkness from over-toil. Walter Scott — he who Anglo-Saxonized the language of Europe, and made a literature — broke down near sixty, and went to his grave with a soft head. 'T is but the other month a young Scotchman died in London, worn out, his mind a blank from literary toil. And, who can doubt it? Angus B. Reach — a clever, witty fellow he was — might have laughed much longer, and made others laugh too, if he had only taken half-care of himself!"

'From Marlborough's eyes the tears of dotage flow,  
And Swift expires a driveller and a show,' —

A soul in ruins; those mysterious, appalling afflictions, laying desolate and waste 'minds that could wander through eternity,' have made us pause and wonder at the awful dispensations of an All-wise Providence, and for a moment doubt their justness. The continued tear and wear, the constant demand for more, more, more, sets the cerebral mass 'on fire.' 'My brain is burning,— I can bear life no longer!' said the author of the 'Old Red Sand-stone,' and shortly ceased to exist. Strange, some said, how Providence should have allowed such a man to pass away from earth in such a manner; but when we consider the subject philosophically, there is nothing mysterious in it, however much we may regret the circumstance. Providence acts by general, not by special laws. Hugh Miller was, intellectually, a giant, and, physically, possessed a frame of iron; but he violated the laws which govern health, — he demanded more work from his brain than it could well perform; it reeled and staggered, but it reeled and staggered in vain. He pulled away, and lashed it into fury, and he perished to gratify his genius and his ambition!"

## NOTE 10, p. 225.

This relates to the year 1858.

## NOTE 11, p. 235.

For those interested in the pursuits and training of our rising graduates, we make only one more quotation, this being part only of one of the last day's questions.

"Assuming the formulæ

$$\frac{l\alpha}{l} + \frac{m\beta}{m} + \frac{n\gamma}{n} = 0$$

$$\frac{\alpha(v^2 - a^2)}{\alpha(v^2 - a^2)} \overline{\beta} \frac{\beta(v^2 - b^2)}{\beta(v^2 - b^2)} \overline{\gamma} \frac{\gamma(v^2 - c^2)}{\gamma(v^2 - c^2)},$$

investigate the equation of the wave surface in a bi-axial crystal."

## NOTE 12, p. 236.

We have given so much space to the Cambridge examination that we have thought it not desirable to enter into any analysis of those of the other two Universities ; and in fact there would be but little variety. As is well known, Cambridge is more especially mathematical and Oxford more classical ; London is but little behind either in each department. He who could take honorable rank in one, would play a respectable part in either of the others. This is only so far as the general degrees of B. A. and M. A. are concerned. The special degrees, in medicine particularly, require examinations of incomparably greater severity in the London University than in either of the elder sisters. Perhaps there is no more severe test applied anywhere, at least so far as theoretical knowledge is involved, and practice so far as is possible also.

## NOTE 13, p. 236.

It is, however, a great mistake to suppose that men who have obtained great distinction and high honors at our two English Universities do not in after life occupy the most eminent positions at the bar, on the bench, and in the Senate. First, as to

*Oxford.* — Earl of Eldon, English Prize Essay, 1771 ; Lord Tenterden (Lord Chief Justice of the King's Bench), English Essay, 1786, Latin verse, 1784 ; Sir W. E. Taunton (Judge in Court of King's Bench), English Essay, 1793 ; J. Phillimore (Professor of Civil Law), English Essay, 1798 ; Sir C. E. Gray (Chief Justice of Bengal), English Essay, 1808 ; Sir J. T. Coleridge (Judge in Court of Queen's Bench), English Essay, 1813, Latin verse, 1810,

**Latin Essay, 1813, 1st class Classics, 1812 ; Herman Merivale (Professor of Political Economy), English Essay, 1830, 1st class Classics, 1827 ; Roundell Palmer (Deputy Steward of the University), Latin Essay, 1835, Latin verse, 1831, English verse, 1832, 1st class Classics, 1834 ; Lord Colchester, Latin verse, 1777 ; Sir J. Richardson (Judge in Common Pleas), Latin verse, 1792 ; Sir Charles Puller (Chief Justice at Calcutta), Latin verse, 1794 ; G. K. Rickards (Professor of Political Economy), English verse, 1830, 2d class Classics, 1833 ; Nassau Senior (Professor of Political Economy), 1st class Classics, 1811 ; Sir Richard Bethell (Attorney-General, University Counsel), 1st class on the Classics, 1818 ; Honorable J. C. Talbot (Deputy High Steward), 1st double Classics, 1825 ; Travers Twiss (Regius Professor of Civil Law), 2d double Classics, 1830.**

**Cambridge.** — Sir F. Maseres (Baron, Exchequer), 4th Wrangler, 1752, Senior Medallist ; Sir Elijah Impey (Chief Justice, Fort William, Bengal), 2d Senior Optime, 1756, Junior Medallist ; Sir J. Wilson (Judge, Common Pleas), Senior Wrangler, 1761 ; Lord Alvanley (Chief Justice, Common Pleas), 12th Wrangler, 1766 ; the late Lord Ellenborough (Chief Justice, King's Bench), 3d Wrangler, 1771, Senior Medallist ; Sir S. Lawrence (Judge, Common Pleas), 7th Wrangler, 1771 : Sir H. Russell (Judge, in India), 4th Senior Optime, 1772 ; the late Lord Manners (Chancellor of Ireland), 5th Wrangler, 1777 ; Chief Justice Warren, of Chester, 9th Wrangler, 1785 ; the late John Bell, Senior Wrangler, 1786, Senior Smith's Prizeman ; Sir J. Littledale (Judge in Court of Queen's Bench), Senior Wrangler, 1787, Senior Smith's Prizeman ; Lord Lyndhurst (late Lord Chancellor), 2d Wrangler, 1794, Junior Smith's Prizeman ; Sir John Beckett (Judge Advocate), 5th Wrangler, 1795 ; the late Sir John Williams (Judge, Queen's Bench), 18th Senior Optime, 1798 ; the late Sir N. C. Tindal (Chief Justice, Common Pleas), 8th Wrangler, 1799, Senior Medallist ; the late Sir L. Shadwell (Vice-Chancellor of England), 7th Wrangler, 1800, Junior Medallist ; Starkie Downing (Professor of Law, University Counsel), Senior Wrangler, 1803, Senior Smith's Prizeman ; Lord Wensleydale, 5th Wrangler, 1803, Senior Medallist ; the late Sir T. Coltman (Judge, Common Pleas), 13th Wrangler, 1803 ; Lord Chief Baron Pollock, Senior Wrangler, 1806, Senior Smith's Prizeman ; Lord Langdale, Senior Wrangler, 1808, Senior Smith's Prizeman ; the late Baron Alderson, Senior Wrangler, 1809, Senior Smith's Prizeman and Senior Medallist ; Sir W. H. Maule (Judge, Common Pleas), Senior Wrangler, 1810, Senior Smith's Prizeman ; Baron Platt (Exchequer), 5th Junior Optimo,

1810; Chambers (Judge of Supreme Court, Bombay), 5th Wrangler, 1811; Lord Cranworth, 17th Wrangler, 1812; Mirehouse, (Author of Law of Tithes, and Common Sergeant of City of London), 13th Senior Optime, 1812; Sir J. Romilly (Downing Professor of Law, and Professor of Law, University College, London), 4th Wrangler, 1813; Vice-Chancellor Kindersley, 4th Wrangler, 1814; Sir R. H. Malkin (Chief Justice of Prince of Wales's Island), 3d Wrangler, 1818; Lord Justice Turner, 9th Wrangler, 1819; the late R. C. Hildyard (Queen's Counsel), 12th Senior Optime, 1823; Mr. John Cowling, Q. C., M. P. (University Counsel, and Deputy High Steward), Senior Wrangler, 1824, Senior Smith's Prizeman; Vice-Chancellor Wood, 24th Wrangler, 1824; Vice-Chancellor Parker, 7th Wrangler, 1825; Mr. Loftus T. Wigram, Q. C. (M. P. for University), 8th Wrangler, 1825; Chief Justice Martin (New Zealand), 26th Wrangler, 1829, 3d in 1st class Classics, and Junior Medallist.

*Dublin.* — 1795, Sir T. Lefroy (Chief Justice of Queen's Bench), gold medal; 1800, Sir J. L. Foster (Judge, Common Pleas, M. P. for University, 1807), gold medal; 1802, P. C. Crampton (Queen's Counsel, Judge, Queen's Bench), gold medal; 1803, F. Blackburne (Lord Chancellor of Ireland), gold medal; 1811, R. H. Greene (Baron of Exchequer), gold medal; 1823, J. H. Monahan (Chief Justice, Common Pleas), gold medal.

NOTE 14, p. 242.

We again quote from the thoughtful writer in the *Saturday Review* of November 7th: "The ascendancy of mind over physical strength is civilization. Everybody knows that Thersites would now bring down Achilles half a mile off with an Enfield rifle. We need not quote Macaulay's remarks,—as brilliant as his remarks usually are, and more true,—about 'the hunchback dwarf who urged forward the fiery onset of France, and the asthmatic skeleton who covered the slow retreat of England' at the battle of Landen. Read the chivalrous and romantic Froissart's account of the deliverance of France from the English invaders,—you will see nothing but the hand of Bertrand du Guesclin. Read the true history of the time, and you will see that the real spring of all was the head of that feeble invalid who conquered the two Edwards, to their great amazement, without ever mounting a horse or drawing a sword. It was the dawn, yet unperceived by the Troubadour, of the triumph of intellect over men-at-arms. And power having passed from the body to the mind, ambition itself (to say nothing of higher motives) will mainly cultivate that which is

now the real source of power. The development of physical strength will be comparatively neglected, and the body, in this sense, will be sacrificed to the mind. Our material part still asserts its claims, as all who have tried to work with the brain under great physical suffering or debility must know too well ; but they are the claims of a servant, not of an equal. Nay, even those gifts of mind which are most akin to and most dependent on bodily health have a tendency to fall under the dominion of others which are of a more eccentric, and, as a man of business might think, of a morbid kind. You naturally picture to yourself the ideal of humanity—the great Man—as a noble bodily presence, full of health and vigor, with a mind as healthy and vigorous as its abode, with all the faculties and acquirements equally balanced, and the soundest judgment sitting supreme over the whole. Look at the records of history, and see how far this ideal is fulfilled by the men who have really moved the world. Consider the strange and unsightly caskets in which the rarest and most potent essences of nature have been enclosed. ‘Is this humanity?’ the practical writer in the *Times* would say of Socrates in his day-long trance of thought, or the macerated and visionary Luther in his Augustinian cell. No, strictly speaking, it is not humanity. It is the upward aspiration of a being of whom mere humanity is the lower and grosser part. It is, in one sense, a sort of disease. But to cure that disease would be to reduce mankind to a mass of money-getting clay.”

NOTE 15, p. 243.

“According to my view, the temperaments are entirely dependent on the different degrees in which different individuals are disposed to the strivings and emotions arising from the depression or excitement of the feeling of self; in other words, in the different degrees of disposition to the states of desire, pleasure, and pain, and on the extent to which these states of the mind are promoted by the composition and states of the organs of the body.”—MÜLLER’s *Physiology*, translated by Baly.

NOTE 16, p. 247.

“System of Physical Education,” p. 33.

NOTE 17, p. 247.

“Infirmities of Genius,” Vol. I. p. 112.

NOTE 18, p. 254.

That a mental endowment should retain its vigor, it is necessary that it should be moderately exercised. If the exercise of the re-

ligious sentiments be interrupted, for example, by too exclusive an attention to science, communion with God will lose its relish. Claudius Buchanan, while at Cambridge, wrote to a friend as follows : "I find this great attention to study has made me exceedingly languid in my devotional duties. I feel not that delight in reading the Bible, nor that pleasure in Divine things, which formerly animated me. On this account have many serious students in this University wholly abandoned the study of mathematics ; for it seems they generally feel the same effects that I do." — DR. CHEYNE, *On Partial Derangement of Mind in supposed Connection with Religion*, pp. 57 - 59.

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## ILLUSIONS AND HALLUCINATIONS.

### NOTE 1, p. 258.

"Des Hallucinations ; ou, Histoire Raisonnée des Apparitions, des Visions, des Songes, de l'Extase, du Magnetisme, et du Somnambulisme" ; Par A. Brierre de Boismont. To this work I am much indebted, in the present paper, for facts and comments, some of which may have been accidentally left unacknowledged.

### NOTE 2, p. 263.

The same author relates the case of an intelligent and amiable man, who "had the power of placing before him at will his own image. He often laughed at this *eidolon*, which also seemed to laugh. This was for some time a diversion, but the result was deplorable. He became persuaded by degrees that he was haunted by his '*double*.' This other self discussed obstinately with him, and to his great mortification often worsted him in argument. At length, wearied with *ennui* and annoyance, he resolved not to enter upon another year. He arranged all his affairs with the utmost method, awaited, pistol in hand, the night of the 31st of December, and when the clock struck midnight, shot himself." — *Duality of the Mind*, p. 126.

Goethe also positively asserts ("Gessammt. Werk." t. xxvi. p. 83) "that on one occasion he saw distinctly his own '*double*.' "

### NOTE 3, p. 263.

During this seclusion in Bethlehem Hospital, he was known as *Blake the Seer*, from the constancy of his visions of the illustrious

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dead. He firmly believed in the reality of his visions ; he conversed with Michael Angelo and Moses ; he dined with Semiramis ; there was nothing of the charlatan in his aspect, — he was simply convinced. He constituted himself the painter of spectres ; with his apparatus prepared, he was always ready to take the portraits of his spiritual visitors, whom he did not invoke, but who came to him expressly to ask that favor. Edward III. was one of his most constant visitors ; as also Mark Antony and Richard III. All these he recognized by intuition as soon as they appeared ; and, granting the truth of his assumption, his conversations with them were distinguished by great accuracy and shrewdness.

## NOTE 4, p. 267.

“Letters on Demonology and Witchcraft,” addressed to J. G. Lockhart, Esq. By Sir Walter Scott, Bart.

## NOTE 5, p. 271.

“Memoir on the Appearance of Spectres or Phantoms occasioned by Disease; with Physiological Remarks.” Read by Nicolai to the Royal Society of Berlin, on the 28th of February, 1799. Translated in *Nicholson’s Journal*, Vol. VI. p. 161.

## NOTE 6, p. 272.

Bostock’s “System of Physiology.” Appendix to chap. xvi., on Ideas and Perceptions. Third edition, p. 751.

## NOTE 7, p. 278.

“Les Farfadets, ou tous les Démons ne sont pas de l’autre Monde.” Par Berbiguière de Terre-Neuve de Thym. Paris, 1821.

## NOTE 8, p. 281.

“Œuvres Choisies et Posthumes de La Harpe,” 4 vols. in 8vo. Paris, 1806. Tome I. p. 62.

## NOTE 9, p. 288.

Lord Herbert of Cherbury relates that when his book, “De Veritate prout distinguitur a Revelatione Verisimili, Possibili, et a Falso,” was approaching its conclusion, he devoted to it every spare moment that he could snatch from business. In doubt as to its publication, he on one occasion prayed audibly for a sign to guide his decision, and affirms that he had no sooner concluded, than he heard a loud but agreeable noise in the heavens, and saw also, in the most serene sky possible, the place whence it came. This, he

says, gave him great joy, believing as he did that his demand was granted. Be it remarked, that the work in question has by no means a Christian tendency, and this anecdote is often quoted against others where similar hallucinations have been supposed to imply supernatural interference for a given purpose.

## NOTE 10, p. 290.

The commentary of Sir Walter Scott on this apparition is very appropriately illustrative of this part of our subject: "The anticipation of a dubious battle, with all the doubt and uncertainty of its event, and the conviction that it must involve his own fate and that of his country, was powerful enough to conjure up to the anxious eye of Brutus the spectre of his murdered friend Cæsar, respecting whose death he perhaps thought himself less justified than at the Ides of March, since, instead of having achieved the freedom of Rome, the event had only been the renewal of civil wars; and the issue might appear most likely to conclude in the total subjection of liberty. It is not miraculous that the masculine spirit of Brutus, surrounded by darkness and solitude, distracted probably by the recollection of the kindness and favor of the great individual whom he had put to death to avenge the wrongs of his country, — though by the slaughter of his own friend, — should at length place before his eyes in person the appearance which termed itself his evil genius, and promised to meet him again at Philippi. Brutus's own intentions, and his knowledge of the military art, had probably long since assured him that the decision of the civil war must take place at or near that place; and allowing that his own imagination supplied that part of his dialogue with the spectre, there is nothing else which might not be fashioned in a vivid dream or a waking reverie, approaching in absorbing and engrossing character the usual matter of which dreams consist. That Brutus, well acquainted with the opinions of the Platonists, should be disposed to receive without doubt the idea that he had seen a real apparition, and was not likely to scrutinize very minutely the supposed vision, may be naturally conceived; and it was also natural to think, that although no one saw the figure but himself, his contemporaries were little disposed to examine the testimony of a man so eminent by the strict rules of cross-examination and conflicting evidence which they might have thought applicable to another person and a less dignified occasion." — *Demonology and Witchcraft*. pp. 10, 11.

It appears, however, that Cassius, who was of the Epicurean school, and had but little faith in spirits, did tell Brutus, with a

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good deal of circumlocution, that he was tired and exhausted, and that his imagination was playing tricks upon him.

**NOTE 11, p. 305.**

**"Du Démon de Socrate."** Par L. F. Lélut.

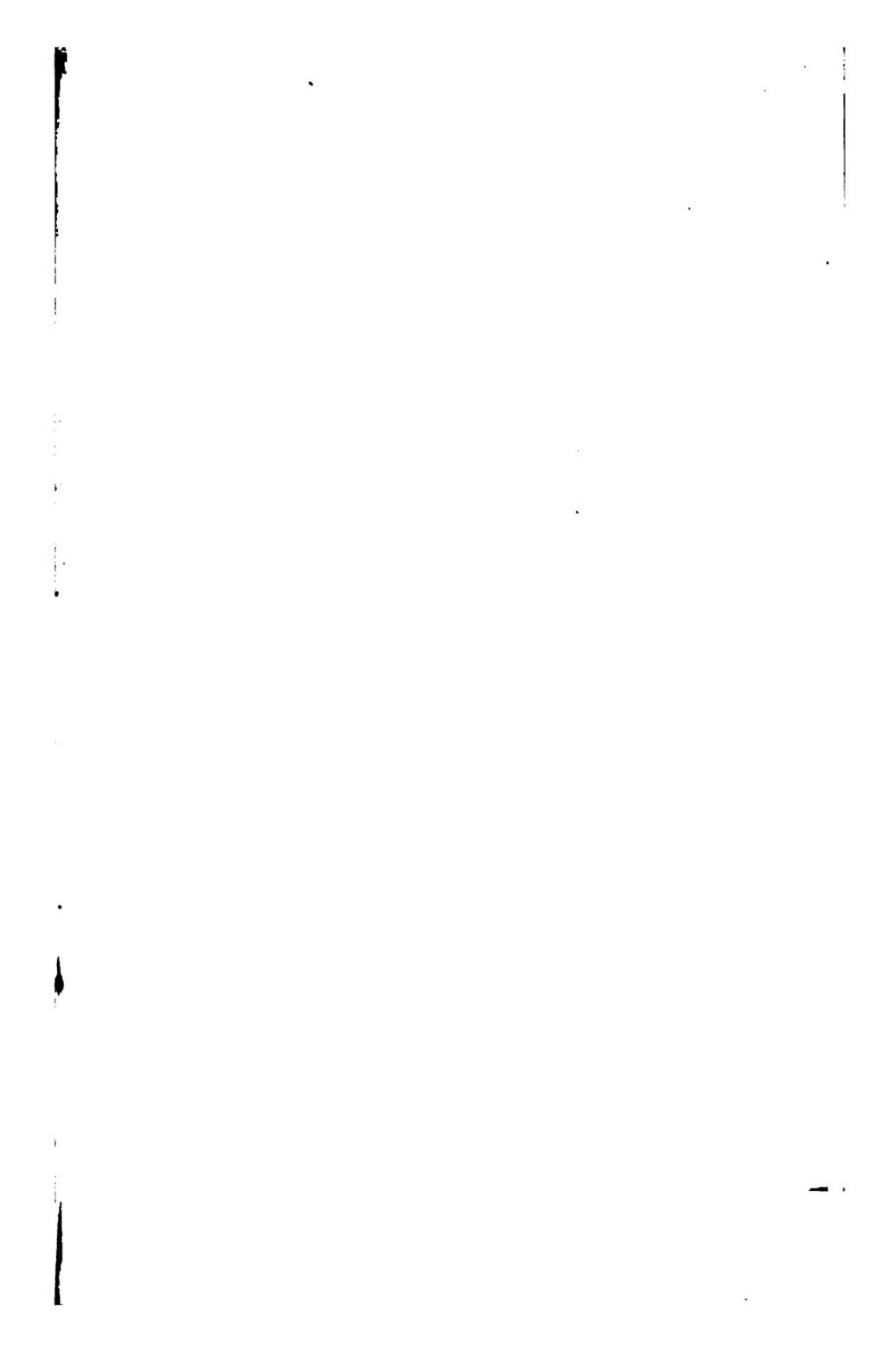
**NOTE 12, p. 316.**

In this and some other passages I prefer giving the original, for the obvious reason that a translation would scarcely be credited.

**NOTE 13, p. 328.**

To avoid frequent references, we state, once for all, that the facts in this paper are derived from "Memoirs of Pascal," by his sister and his niece, from the "Recueil d'Utrecht," and from M. Lélut's "Monograph," published in Paris in 1846.

**THE END.**







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tutes genius." Lord Chesterfield acknowledges that the power of applying an attention, steady and undissipated, to a single object, is the sure mark of a superior genius.

Whether we give full credence to all this weight of testimony or not, we are bound to recognize in attention an element of paramount importance, as influencing what is generally called the "train of thought"; and as one which, in appearance at least, and in popular estimation, often makes the difference between a wise man and a fool; and we think it useful to investigate briefly some few of the phenomena of thought, considered in this point of view chiefly, as more or less affected by attention. These are worthy of much more scientific analysis than they have hitherto received; and much empirical observation is still needed. When in dreams, where volitional attention is in entire abeyance, we find that we live months or years in a few hours, we are too apt to be content with saying that these are "the stuff that dreams are made of"; perhaps never considering that, whether sleeping or waking, this is a veritable phenomenon, and potentiality of mind,—perhaps more wonderful than our most brilliant waking thoughts. And when we meet with a student so deeply immersed in his problem, or his thought, as to know nothing of the physical influences around,—to be entirely insensible to pain or danger,—we have a strong tendency to *explain* the whole by the theory that he is an "absent man"; perhaps careless of *why* he is absent, and how mind can so influence matter; not clearly recognizing that therein is involved one of the most important questions of our nature.

In natural sleep, as before observed, volitional attention is dormant, whilst memory and imagination are thereby allowed to run riot, and to wander in rapid suc-

cession over the nearest and most distant scenes, and to represent intercourse with the distant living or dead, without arousing any sensations of surprise or incongruity. Under peculiar circumstances, however, the attention may be aroused to certain objects, or classes of objects, around which then all the thoughts cluster, and towards which all the actions tend ; whilst it remains not only indifferent to all other surrounding objects, but is incapable of being attracted to them by any means short of such as will interrupt the special mental condition. Many of the phenomena attendant upon this and allied conditions were investigated in the preceding paper ; \* and it was concluded that they were due to an organic *polarity*, by virtue of which the brain became sensitive to certain impressions in an extraordinary degree, remaining insensible to all others, physical or otherwise ; in the same manner as the charged conductor of an electrical machine responds only to conductors, appearing indifferent to all non-conductors or electrics ; or as a magnetized steel bar is sensitive only to steel, and indifferent to other matters. Perhaps a more apt illustration may be drawn from the horse-shoe bar of soft steel, which becomes a powerful magnet (i. e. polar) on passing an electric current through coils of copper wire around it ; but as soon as the current ceases, the polarity is resolved, and the bar presents only the properties of common steel. It was remarked, also, that during the continuance of this polarity, this species of attention, the sleep of the other faculties became much more profound, and more difficult to interrupt by any influence ; the nervous influence being so concentrated upon the awakened parts of the organism, that the sensitivity of the remainder was destroyed, or much lessened.

The one remarkable circumstance about all the various

\* Vide "Somnambulism."

and complicated actions observed in the higher forms of somnambulism is that they occur during sleep, and indicate a special attention of the faculties only to one class of objects, the insensibility towards others being complete. Now we meet with phenomena during the waking hours, which, considered objectively, are strictly analogous to these,—they have only a different point of departure. Such are the phases of absence of mind, reverie, and abstraction,—all essentially different in nature, yet all presenting the same external aspect ; and so far allied as that they depend respectively upon the degree of attention which the will has brought to bear upon certain pursuits. These, one and all, it would be difficult to distinguish by accurate description from the higher lucidity of somnambulism,—except in so far as the former have originated by a disturbance of balance amongst the faculties during waking moments ; whilst the latter commenced by the polarity itself, organically excited during sleep.

It must be borne in mind that, for the complete appreciation of the external world, three things are essential : (1) Organs of the senses in a normal healthful condition ; (2) a proper distribution of nervous fluid,\* ready to be stimulated by the appropriate objects, as light to the eye, sonorous vibrations to the ear, &c. ; and (3) an exercise (more or less under the influence of the will) of the faculty of attention to the impressions so produced and conveyed. All these are obviously neces-

\* Here, again, we would remark that no theory is implied, or to be understood, by the use of this term "*nervous fluid*." It is used only to express the fitness or adaptedness for appropriate excitement, by any nerve or set of nerves, as thus: the optic nerve is properly supplied with nervous fluid when it responds normally to its own special stimulus of light, &c. But by this we no more hypothecate the actual existence of a fluid proper, than we do when speaking popularly of the electric fluid.

sary ; if the first be absent, the negative result is clear : the second is equally essential ; and it is with the variations of the third element that we are now especially concerned, and with those changes which these variations induce in the distribution of the nervous fluid. We will notice these under three natural divisions, according (1) as the attention cannot be directed to any one train of thought, but wanders off to any other, defying the efforts of the will to restrain it ; (2) as it is voluntarily surrendered up, and the fancy or imagination allowed, or even encouraged, to roam amongst things known or unknown, things in heaven, and things on earth ; and (3) as the attention is firmly fixed on one train of thought, to the exclusion of all others, and to the ignoring of all external influences. All these present the same external aspect ; all are classed popularly under one head, — that of “ wool-gathering,” or some analogous expression ; yet, whilst the first form is the characteristic of the feeblest and most inefficient intellects, the second is the great prerogative of poets and artists ; and the third, the highest of all, is generally found in the persons of men of intellect the most exalted, of genius the most transcendent. These forms may be known, for convenience, as Revery, Voluntary Waking Dream, and Abstraction of Mind.

1. Revery is an approach to dreaming or sleep ; the attention to surrounding objects begins to fail ; and, instead of being fixed on what is passing, is wandering over a thousand vague and imperfectly connected ideas. It is common, as Dr. Mason Good remarks, “ at schools and at church ; over tasks and sermons ; and there are few readers who have not frequently been sensible of it in one degree or other.” Who has not often read page after page of a book, of which either the matter has been uninteresting or the style repulsive, and suddenly discov-